INTEGRATED AGRICULTURAL EXTENSION MODEL

*Focused on **WORKING IN, WITH** and **FOR** the community*

Francisco Telémaco Talavera Siles

International Editorial on
Education and Development

INTEGRATED AGRICULTURAL EXTENSION MODEL

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ISBN

ISBN: 979-8-9961308-0-8

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This publication has been conceived as a contribution to agricultural development, capacity building, and the improvement of living conditions for small- and medium-scale agricultural producers.

Publication

Published by:
International Editorial on Education and Development

Edition

First Edition
2026

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EXECUTIVE SUMMARY

Agricultural extension has historically been a fundamental tool for improving production, productivity, and the living conditions of small-scale producers. However, despite numerous programs, investments, and technological advances, its impact has remained limited in many rural contexts.

Persistent structural challenges continue to affect the sector, including low technology adoption, limited sustainable impact, the disconnect between training and practical application, and insufficient improvements in income and productivity. This demonstrates that the central problem does not lie in the lack of knowledge or technology, but rather in the approach traditionally used to implement agricultural extension.

For decades, the dominant model has been based on the transfer of technologies as isolated solutions, with training centered on sporadic events, limited contextualization, minimal producer participation, and the absence of continuous technical support and follow-up. Added to this is a growing risk: the uncritical adoption of advanced technologies such as drones, artificial intelligence, and georeferencing, often viewed as "magic solutions," thereby repeating past mistakes with greater complexity and cost.

In response to this reality, this book proposes a paradigm shift grounded in four fundamental principles:

1. A systems approach, which views the farm as an integrated system;
2. Active producer participation, recognizing farmers as protagonists in the process;
3. Field-based learning, where knowledge is built through practice; and
4. Continuous technical support and follow-up, as an essential condition for achieving sustainable change.

This approach is translated into an operational model based on working IN, WITH, and FOR the community: under real conditions, with active participation, and focused on achieving concrete results in productivity, income generation, and sustainability.

The proposed methodology is structured around six phases: participatory systems diagnosis, problem prioritization, co-design of solutions, field validation, technical support and follow-up, and continuous evaluation with adaptive adjustments. This process transforms agricultural extension from a technology-transfer model into a model centered on capacity building and continuous learning.

Within this framework, technology is not rejected; rather, its role is redefined. The book proposes a strategic use of technology based on a progressive logic: basic technologies as the foundation of the system, intermediate technologies to improve efficiency, and advanced technologies as optimization tools only when the foundational elements are already consolidated.

The implementation of this model enables greater adoption of improved practices, sustainable increases in production and productivity, risk reduction, and the strengthening of community organization.

For this approach to generate meaningful impact, institutional, technical, and territorial transformations are required, including medium- and long-term programs, the training of extension agents as facilitators, the use of practical tools, community participation, and the construction of trust-based relationships.

In summary, agricultural development does not depend solely on the introduction of new technologies, but on the way processes are built within the territory and with the people involved.

Effective agricultural extension is not an event; it is a process.
It is not transfer; it is co-construction.
It is not technology; it is system thinking.

FOREWORD

Agriculture has been, continues to be, and will remain one of the fundamental pillars of the development of our societies. Its importance lies not only in its role in food production, but also in its contribution to employment, economic growth, environmental balance, and the social stability of our countries.

However, despite its strategic importance, the agricultural sector continues to face persistent challenges, particularly among small- and medium-scale producers. These challenges cannot be explained solely by limitations in resources or access to technology, but also by the way support processes for producers have been conceived and implemented.

Within this context, agricultural extension assumes a decisive role. For decades, numerous institutional efforts have sought to strengthen producers' capacities through training programs, technology transfer, and technical assistance. Nevertheless, the results have not always met expectations. In many cases, interventions have achieved only limited impact due to approaches focused more on the transmission of knowledge than on the construction of sustainable processes of learning and development.

It is precisely at this point that the work of Engineer Francisco Telémaco Talavera Siles acquires special relevance. This book is not merely an academic contribution; it is the result of a lifetime closely connected to rural life, integrating practical experience, scientific training, and profound reflection on the realities of agriculture in our region.

With clarity and solid foundation, the author proposes the need to transform the traditional approach to agricultural extension: moving from event-based models toward continuous processes; from technology transfer toward the joint construction of solutions; and from external intervention toward coordinated work IN, WITH, and FOR the community.

One of the greatest contributions of this work is its emphasis on understanding the farm as a system, recognizing the producer as the central actor of change, and highlighting technical support and follow-up as essential elements for achieving sustainable results. Likewise, the author warns about the risks of viewing technology—particularly advanced technology—as an isolated solution, a reflection that is especially timely in the current context.

Another remarkable aspect of this work is the incorporation of real experiences and lessons learned, which make it possible to understand not only what should be done, but also what should be avoided. This gives the book a practical and valuable character for technicians, institutions, and decision-makers alike.

The proposal of an integrated agricultural extension model represents a

significant contribution to the design of policies, programs, and strategies aimed at sustainable rural development.

I am convinced that this book will stimulate reflection, challenge traditional approaches, and promote new ways of working in the agricultural sector—more effective, more humane, and more sustainable. The future of agriculture will depend, to a great extent, on our capacity to learn, adapt, and work together with producers in building real solutions.

Finally, I would like to express to Engineer Telémaco Talavera my admiration, affection, and respect for his outstanding professional, human, and social qualities, as well as for his strong ethical, moral, and spiritual values.

Eng. Efraín Medina Guerra
Former Dean of the Faculty of Agronomy
Former Rector of the University of San Carlos of Guatemala
Former Secretary General of the Central American University Council and Federation
Former Minister of Agriculture of Guatemala
Former Executive Director of the International Regional Organization for Agricultural Health (OIRSA)
President of the Association of Agronomists of Guatemala

DEDICATION

To the **small- and medium-scale women and men producers of the world**, who, through their daily work, quiet effort, and deep connection to the land, produce most of the food consumed across the globe, both in rural areas and in cities.

To all of them, who sustain life with their own hands, my respect, admiration, and enduring commitment.

To **my colleagues and friends from the Class of 1986 of the National Agrarian University**, as this year marks the 40th anniversary of our graduation as Agricultural Engineers.

To the authorities and the entire **university community of the International University Antonio de Valdivieso**, for their outstanding work in support of the agricultural sector.

A special dedication to **Mr. Eduardo Argüello González ("Guayito")**, for being an extraordinary person of profound human quality, and for his unwavering passion for rural life, nature, and agricultural development.

ACKNOWLEDGMENTS

To **my father** (may he rest in peace), for teaching me how to work in the field, to always do my best, and above all, the value of honesty and responsibility.

To **Eng. Efraín Medina Guerra**, an extraordinary human being and distinguished professional with an outstanding national and international career, for honoring me by writing the foreword to this book.

To **all my teachers** at every stage of my education, for their guidance and example.

To **my classmates**, for their friendship and for everything I learned from them throughout the years.

To **my friends from different countries**, from whom I have always learned a great deal and from whom I have had the privilege of receiving appreciation, support, and respect.

Especially to the **women and men producers of the rural world**, and to rural workers.

And most especially, **to humble people** with limited material and economic resources, yet with boundless generosity and dignity, who always offered me the very best of themselves: their appreciation, respect, and friendship.

Finally, my infinite **gratitude to God** for giving me life, for the moments of success and joy, and also for the moments of pain and sorrow, which have helped shape me and better prepare me to face the adversities of life.

EPIGRAPH

Technology can improve production,
but only people can transform the system.

INTRODUCTION

AGRICULTURAL EXTENSION TRANSFORMS LIVES AND COMMUNITIES

For decades, agricultural extension has been one of the main tools for improving production and productivity in the rural sector.

However, despite the efforts of institutions, technicians, and organizations, the results have not always been as expected.

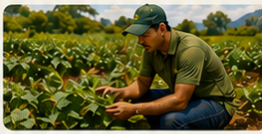
This has led us to question not only what we are doing, but how we are doing it.

IN MANY CASES:

- Knowledge is not applied
- Technologies are not adopted
- Changes are not sustained

This book arises precisely from that reflection.

It is not intended to be a technical manual on specific crops or livestock systems. Its purpose is to propose a different way of understanding and delivering agricultural extension, based on direct field experience with thousands of producers.



THE APPROACH PROPOSED IN THIS WORK IS BASED ON FOUR FUNDAMENTAL PRINCIPLES:

UNDERSTAND THE PRODUCTION SYSTEM

Analyze the reality of the territory, its resources, limitations, and potential.

WORK WITH PEOPLE

Listen, dialogue, and build trust-based relationships with the community.

BUILD SUSTAINABLE PROCESSES

Promote changes that are appropriate, viable, and enduring over time.

ACCOMPANY WHERE CHANGE HAPPENS

Facilitate, guide, and support decision-making, respecting local knowledge.

ONE OF THE CENTRAL CONCEPTS OF THIS BOOK IS TO WORK

IN, WITH, AND FOR the community

This approach enables trust, participation, and sustainability in actions.

Throughout the book, concepts, methodologies, tools, and real experiences are developed, showing that meaningful change is possible when we change the way we intervene in the field.

THIS IS NOT A RECIPE BOOK.

IT IS A BOOK OF APPROACH.

THE PROBLEM IS NOT THE FIELD. THE PROBLEM IS HOW WE HAVE WORKED IN THE FIELD.

TO UNDERSTAND REALITY, LISTEN TO PEOPLE, AND BUILD TOGETHER THE PATH IS THE KEY TO SUSTAINABLE AND MEANINGFUL RURAL DEVELOPMENT.

INTRODUCTION

To begin, I must address the role of technology and its relationship to the book you now hold in your hands. In writing this work, I have combined my own experience, vision, academic background, and professional practice with the use of technology. For example, I have relied on artificial intelligence to review and improve certain aspects of the manuscript, but without becoming entirely dependent on it.

To depend completely on AI would mean placing the human dimension in the background and ignoring the limitations and biases that algorithms still possess. Yet refusing to use it would be equivalent to continuing to rely on a slide rule for mathematical calculations or, more recently, insisting on using traditional cameras for non-professional photography instead of taking advantage of the capabilities of a smartphone camera. Likewise, it would be similar to continuing to rely exclusively on conventional telephones or written letters, with all the time and cost involved, when real-time communication is now possible through information and communication technologies at virtually no additional cost.

More specifically, and given that it is the central theme of this book, it is important to recognize that agricultural extension has, for decades, been one of the principal tools for improving production and productivity in the rural sector.

However, despite the efforts made by institutions, technicians, and organizations, the results have not always met expectations.

In many cases:

- Knowledge is not applied.
- Technologies are not adopted.
- Changes are not sustained.

This has led us to question not only what is being done, but also how it is being done.

This book emerges precisely from that reflection.

It is not intended to be a technical manual on specific crops or livestock systems. Its purpose is to propose a different way of understanding and implementing agricultural extension, grounded in direct field experience with thousands of women and men producers.

The approach presented in this work is based on fundamental principles:

- Understanding the production system

- Working with people
- Building sustainable processes
- Accompanying rather than imposing

One of the central concepts of this book is working:

IN, WITH, AND FOR the community

This approach makes it possible to generate trust, participation, and sustainability in actions and processes.

Throughout the book, concepts, methodologies, tools, and real-life experiences are presented to demonstrate that meaningful change is possible when the way we intervene in the field is transformed.

This is not a recipe book.

It is a book about approach.

The problem is not the rural sector itself.

The problem lies in how work has been carried out in the field.

The transformation of rural development does not occur through isolated intervention, but through a process: understanding, questioning, changing the approach, applying, accompanying, sustaining, scaling, and integrating. That is the sequence presented throughout this book.

Coffee Production
Livestock Production
Dairy Products and Animal Production
Water Resources and Ecosystems
CHAPTER
1
The Importance of the Agricultural Sector in Rural and Urban Life
Soil Sustainability and Agricultural Production
Poultry Production
Food Production and Nutrition
Urban Development and Food Supply
Environmental Sustainability and Renewable Energy
Community Developme and Rural Livelihood

CHAPTER I

The Importance of the Agricultural Sector in Rural and Urban Life

1. More Than Food Production

The agricultural sector has historically been recognized for its fundamental role in food production. However, its importance extends far beyond this essential function.

It is not only about producing food for survival. It is about sustaining life itself.

The agricultural sector constitutes the foundation upon which multiple dimensions of human, economic, social, and environmental well-being are built.

Without agriculture, there is no food. Without food, there is no life.

But beyond that, without the agricultural sector there would also be neither environmental balance nor truly sustainable economic development.

2. Food Production for Rural and Urban Areas

Small- and medium-scale producers are responsible for a significant share of the food consumed daily.

They:

- Feed their own families.
- Supply local markets.
- Sustain a large portion of urban consumption.

Cities depend on rural areas.

Every food product that reaches an urban table originates from the work and effort of a rural producer.

Rural communities feed the cities, even though urban society does not always fully recognize it.

3. Employment and Income Generation

The agricultural sector represents one of the principal sources of employment in many countries.

It generates:

- Direct employment in productive activities.
- Indirect employment in transportation, marketing, and agroindustry.
- Income for millions of rural families.

In many economies, particularly in developing countries, the agricultural sector constitutes a strategic pillar for poverty reduction and economic dynamism.

4. Conservation and Management of Natural Resources

The agricultural sector not only uses natural resources; it also has the capacity to conserve and protect them.

Among these resources are:

- Soil
- Water
- Biodiversity
- Ecosystems

When production systems are properly managed, agriculture can:

- Conserve soils.
- Protect water sources.

- Preserve biodiversity.

However, when productive practices are inadequate, agriculture can also contribute to environmental degradation.

The sustainability of the planet depends, to a great extent, on how agriculture is practiced.

Development cannot be built by destroying the very foundation that sustains it.

5. Water Production and Regulation

One aspect that is rarely recognized is the role of the agricultural sector in water generation and regulation.

Well-managed production systems:

- Promote water infiltration into the soil.
- Recharge aquifers.
- Protect watersheds.

A large portion of the water consumed in cities originates in rural territories.

The countryside does not only produce food; it also produces water.

Protecting rural areas means protecting water. And protecting water means protecting life.

6. Oxygen Production and Air Purification

Through the biological processes of crops, trees, and agroforestry systems, the agricultural sector contributes to:

- Oxygen production.
- Carbon capture.
- Air purification.

These processes are essential for life on Earth and benefit both rural and urban populations.

The air breathed in cities also depends on the countryside.

Rural areas do not only feed us. They also allow us to breathe.

7. Foreign Exchange Generation and Economic Development

In many countries, the agricultural sector constitutes a key source of foreign exchange through the export of products such as:

- Coffee
- Meat
- Grains
- Fruits
- Forest products

These revenues allow countries to:

- Invest in healthcare.
- Strengthen education.
- Develop infrastructure.
- Promote economic growth.

8. A Strategic Yet Undervalued Sector

Despite its enormous importance, the agricultural sector often does not receive the attention it deserves.

Persistent challenges include:

- Low investment.
- Limited technical support.
- Lack of sustained policies.
- Insufficient social recognition.

This creates a profound contradiction:

The sector most essential for life is often one of the least valued.

9. Implications for Agricultural Extension

Recognizing the importance of the agricultural sector means understanding that:

Agricultural extension is not a secondary service. It is a strategic tool for development.

Strengthening producers means:

- Ensuring food security.
- Protecting the environment.
- Driving economic growth.

- Sustaining life.

10. Final Reflection

The agricultural sector is not merely an economic activity.

It is:

- A source of life.
- A driver of development.
- A foundation of sustainability.

Investing in rural areas is not an option. It is a necessity for both the present and the future.

Understanding agriculture as a system is the first step toward transforming it.

11. A Reality That Challenges Us

Despite its enormous relevance, the agricultural sector faces profound challenges:

- Low productivity among many small-scale producers.
- Limited access to resources.
- Environmental degradation.
- Lack of effective technical support and follow-up.

But there is an even deeper issue:

☞ It is not only a problem of the countryside.
It is also a problem of how work has been carried out in the countryside.

To transform the agricultural sector, it is first necessary to understand why it has not changed as expected.

CHAPTER II

Why Have So Many Agricultural Projects Failed?

A Necessary Reflection for Transforming Rural Development

1. An Uncomfortable but Necessary Question

For decades, countless programs, projects, and initiatives have been promoted with the objective of improving the agricultural sector.

Significant investments have been made in:

- Financial resources
- High-level technical knowledge
- Institutional efforts

Likewise, numerous initiatives have included:

- Training programs
- Technology transfer processes
- Distribution of inputs
- Technical assistance

And yet, in many cases, the results have not been what was expected.

This inevitably raises a critical question:

Why, despite so much effort, has the impact remained limited?

This is not a question intended to criticize.

It is a question intended to learn.

2. The Problem Has Not Been a Lack of Good Intentions

It is important to recognize something fundamental:

☞ Most projects have been implemented with good intentions.

They have involved:

- Committed technicians
- Service-oriented institutions
- Organizations genuinely interested in contributing to development

However, experience has demonstrated a crucial reality:

Good intentions are not enough when the approach itself is inadequate.

3. The Dominant Approach: More Technology = More Development

One of the most deeply rooted assumptions has been the belief that agricultural development depends primarily on the incorporation of technology.

Under this logic, efforts have focused on promoting:

- New seed varieties
- New breeds
- New inputs
- New equipment

All with the expectation that introducing these technologies would automatically improve production and productivity.

But reality has shown otherwise.

Technology may arrive… but it is not always adopted. And even when it is adopted, it is not always sustained.

4. The Disconnect from the Producer's Reality

One of the deepest problems has been the lack of understanding of the context in which farmers live and produce.

Many interventions have been designed:

- From offices
- From theoretical models
- From ideal conditions

Without sufficiently considering:

- The producer's real limitations
- Available resources
- Accumulated experience
- The logic behind decision-making

Reality cannot be transformed if it is not first understood.

5. When Knowledge Does Not Become Action

In many agricultural extension processes, producers:

- Learn
- Understand
- Participate

But once they return to their farms:

☞ they continue doing exactly what they were doing before.

This does not happen because of a lack of interest.

It happens because:

- The knowledge was not truly applicable.
- Conditions for implementation did not exist.
- There was no technical support and follow-up.
- The risk of change was too high.

The real challenge is not teaching.

The real challenge is ensuring that knowledge becomes action.

6. Repeated Mistakes in Fieldwork

Based on direct experience with thousands of producers, it is possible to identify recurring mistakes that repeatedly undermine results.

Even when they appear minor, these mistakes ultimately have a profound impact.

6.1 Speaking Without Connecting

The use of highly technical language—academically correct but disconnected from the producer's reality—creates barriers.

Producers do not need complex terminology.

They need understanding.

Communication is not merely about transmitting information. It is about generating comprehension.

6.2 Correcting Instead of Building

Telling a producer:

☞ "That is wrong."

May be technically accurate, but socially ineffective.

This generates:

- Resistance
- Distrust
- Rejection of learning

Producers do not need to be corrected.

They need support in improving.

6.3 Recommendations Without Context

Many recommendations fail because they do not consider:

- Available resources
- Climatic conditions
- Economic realities

What works in one place does not necessarily work in another.

6.4 Telling What to Do, But Not How to Do It

One of the most common mistakes is offering general recommendations without providing practical alternatives.

For example:

☞ “Do not burn the pasture.”

Although technically correct, if no realistic alternatives are offered for managing:

- Weeds
- Parasites
- Costs

The producer will continue doing the same thing.

Without alternatives, there is no change.

6.5 Imposing Instead of Building

Language also reveals the approach being used.

Saying:

✖ “Do this.”
✔ “Let us do this together.”

Makes a profound difference.

Change cannot be imposed.

It must be built collaboratively.

7. The Absence of the Key Element: Technical Support and Follow-Up

Many extension processes have been limited to:

- Training
- Informing
- Recommending

But they have forgotten something essential:

☞ providing continuous support and follow-up.

Producers do not only need to know.

They need to:

- Try
- Adjust

- Make mistakes
- Learn through practice

And throughout that process, they need support.

Without support and follow-up, knowledge fades away.

With support and follow-up, knowledge becomes transformation.

8. The Weight of Risk in Decision-Making

Producers do not make decisions under ideal conditions.

Every decision involves risk:

- They may lose their harvest.
- They may affect their income.
- They may compromise their family's well-being.

For this reason, producers often do not adopt new practices—not because they fail to understand them, but because:

☞ they cannot afford to fail.

For the technician, a recommendation may simply be an option.

For the producer, it may represent a life-changing gamble.

9. An Inevitable Conclusion

After analyzing all these factors, the conclusion is clear:

The problem has not been the lack of knowledge or technology.

The problem has been the approach itself.

Work has too often been carried out:

- From theory rather than from reality
- From isolated events rather than continuous processes
- From imposition rather than collaboration
- From technology rather than from systems thinking

10. A Turning Point

Recognizing this reality does not represent an ending.

It represents a beginning.

Because understanding why expected results have not been achieved makes it possible:

☞ to do things differently.

If the problem lies in the approach, then the solution is not to continue doing more of the same.

The solution is to transform the way we work.

This leads us to a fundamental conceptual shift:

Moving from technology transfer toward the construction of human-centered processes.

☞ The next chapter addresses this transformation:

The Conceptual Shift: From Technology to Human Processes.

CHAPTER III

The Conceptual Shift: From Technology to Human Processes

1. The Time to Change the Way We Think

After analyzing why so many agricultural projects have failed to achieve the expected results, one unavoidable conclusion emerges:

☞ It is not about doing more.
It is about doing things differently.

For a long time, agricultural development has been viewed primarily as a matter of:

- More technology
- More inputs
- More training

However, experience has shown that while these elements are important, they are not sufficient.

Real change does not occur simply when something new is introduced.

It occurs when people transform the way they do things.

2. The Traditional Paradigm: Transfer in Order to Transform

The dominant model of agricultural extension has traditionally been based on an apparently simple logic:

☞ The technician knows → the producer learns → the producer applies.

Under this approach:

- Solutions are designed externally.
- Knowledge is transmitted.
- Producers are expected to adopt it.

But reality has demonstrated that this process is not as linear as it appears.

Knowing is not the same as doing.

And doing is not the same as changing.

3. The Blind Spot: People

One of the greatest mistakes has been focusing attention on technology rather than on people.

It has often been assumed that if producers gain access to knowledge and tools, they will automatically change the way they produce.

But producers are not machines that simply execute instructions.

They are human beings who:

- Think
- Evaluate
- Feel
- Decide

And their decisions are influenced by:

- Their experience
- Their resources
- Their fears
- Their expectations

Agricultural development is not merely a technical process.

Above all, it is a human process.

4. What Really Happens on the Farm

When producers receive a recommendation, they do not apply it immediately.

First, they go through an internal decision-making process:

- Is this truly beneficial for me?
- Can I actually do it?
- What happens if I fail?
- Is the risk worth taking?

This process—often invisible to the technician—is what ultimately determines whether change will occur.

Change does not depend solely on the recommendation.

It depends on the producer's decision.

5. Learning Is Not Listening—It Is Living the Process

One of the greatest lessons learned through field experience is understanding that producers do not learn merely by listening.

They learn by:

- Doing
- Experimenting
- Making mistakes
- Adjusting

The knowledge that truly transforms is knowledge built through practice.

The classroom teaches.

The farm transforms.

6. Examples That Reveal Reality

Fieldwork constantly reveals situations that clearly illustrate this dynamic.

🌱 Planting Density

Many producers plant more seeds per planting spot.

Not necessarily because they ignore technical recommendations.

But because:

- It facilitates manual planting.
- It reduces labor time.
- It fits their practical logic.

The issue is not ignorance.

It is adaptation to their reality.

🐄 Calf Feeding

Reducing the amount of milk allocated to a calf is not always simply a technical mistake.

It is often an immediate economic decision.

The producer thinks:

☞ “I need to sell milk today.”

Even if this may negatively affect the animal’s growth in the future.

🌳 Tree Removal

Removing trees to expand grazing areas may initially appear to be a good decision.

However, producers often fail to visualize:

- The impact on the microclimate
- The loss of shade
- Reduced water availability

Producers do not intentionally make bad decisions.

They make decisions based on the information and conditions available to them.

7. The New Approach: Working with Processes, Not Recipes

If the problem is not a lack of knowledge, but rather the way change is constructed, then the approach itself must change.

Moving from:

✖ Transferring solutions
✔ Building processes

This means:

- Accompanying rather than imposing

- Listening before recommending
- Adapting rather than generalizing
- Building trust

Change is not delivered.

It is built.

8. The Role of the Technician: From Expert to Facilitator

This new approach profoundly transforms the role of the extension agent.

The technician is no longer simply the person who possesses knowledge.

Now, the technician becomes the one who:

- Listens
- Understands
- Accompanies
- Guides
- Builds together with the producer

The best technician is not necessarily the one who knows the most.

It is the one who enables producers to act, learn, and improve.

9. The Role of the Producer: From Recipient to Protagonist

The producer ceases to be:

✖ A beneficiary
✖ A passive recipient

And becomes:

✔ The central actor
✔ The decision-maker
✔ The innovator

Development begins when producers recognize themselves as the protagonists of their own transformation process.

10. A Transformation That Changes Everything

This conceptual shift is not a minor adjustment.

It is a profound transformation in the way agricultural extension is understood and practiced.

It means moving from:

- Technology → People
- Event → Process
- Teaching → Learning
- Imposition → Co-construction

It is not merely about changing what is done.

It is about changing how it is done.

Agricultural development does not depend exclusively on what is known.

It depends on:

- How people are engaged
- How processes are built
- How change is supported over time

Technology can improve production.

But only people can transform the system.

If change depends on people, then the way we work with them becomes decisive.

This leads us to the central principle of this book:

Working IN, WITH, and FOR the Community.

CHAPTER IV
Working IN, WITH, and FOR the communit
the principle that transforms agricultural extension
WORKING IN
the community
WORKING WITH
the community
WORKING FOR
the community
MORE PRODUCTION
BETTER INCOMES
SUSTAINABILITY
FAMILY WELL-BEING
In real conditions, using the farm as a learning space.
We start from local reality
We learn by doing
We value local knowledge
Through active participation and joint construction of solutions.
We listen and engage in dialogue
We make decisions together
We build trust
Focused on concrete res
productivity, income, and sustainability.
We generate measurable results
We improve quality of life
We ensure a sustainable future
Together, we transform the field, strengthen communities, and build a better future.

CHAPTER IV

Working IN, WITH, and FOR the Community:

The Principle That Transforms Agricultural Extension

1. More Than a Methodology: A Way of Understanding Development

After understanding that change in the agricultural sector does not depend solely on technology, but rather on people and the processes they build, a fundamental question emerges:

☞ How should we work with producers in order to achieve real and sustainable change?

The answer is not found in a specific tool or an isolated technique.

It is found in a simple yet profoundly transformative principle:

Working IN, WITH, and FOR the community.

This is not merely a methodological approach.

It is a way of seeing, understanding, and living agricultural extension.

2. The Historical Mistake: Working from the Outside

For a long time, agricultural extension has been developed from an external perspective.

Work has been carried out:

- From institutions
- From offices
- From models designed far from the realities of rural life

And only afterward has that knowledge been taken into communities.

Frequently:

- Without fully understanding their reality
- Without considering their conditions
- Without genuinely involving people

Attempts have been made to transform rural areas… without truly being present in them.

This approach has generated:

- Low adoption of practices
- Distrust
- Unsustainable processes

3. The Shift in Approach: Returning to the Territory

Transforming agricultural extension requires a profound change:

☞ Moving from working for the community from the outside, to working with the community from within.

This is expressed through three inseparable dimensions.

🟤 3.1 Working IN the Community

Being Where Reality Happens

Working IN the community means developing processes in the place where reality actually occurs:

- On the farm
- In the field plot
- Within the territory
- Under the producer's real conditions

Not in:

- Remote meeting rooms
- Idealized conditions
- Environments disconnected from reality

The farm is not merely a production site.

It is the true learning environment.

🌱 Why Is This So Important?

Because within the community:

- Real limitations become visible
- Concrete problems are understood
- Solutions are validated

What does not work on the farm does not work at all.

🟤 3.2 Working WITH the Community

Recognizing Producers as the Protagonists

Working WITH the community means understanding that producers are not passive recipients.

They are:

- The ones who know their reality
- The ones who make decisions
- The ones who assume risks
- The ones who live with the consequences

Producers do not need someone merely telling them what to do.

They need to be part of the solution.

Joint Construction

This implies:

- Listening before proposing
- Asking before recommending
- Valuing local knowledge
- Integrating experience with technical expertise

Knowledge is not imposed.

It is built collaboratively.

🍥 3.3 Working FOR the Community

The Purpose of the Work: Real Results

Working FOR the community means that every effort must be oriented toward improving people's lives.

It is not simply about:

- Training
- Informing
- Carrying out activities

It is about achieving:

- Higher production
- Greater productivity
- Better incomes
- Improved well-being

The goal is not merely to teach.

The goal is to transform reality.

4. The Integration of the Three Elements

These three components cannot be separated.

They function as a system:

- IN → guarantees relevance to reality
- WITH → guarantees participation
- FOR → guarantees impact

If one element is missing, the process weakens.

When all three are present, transformation occurs.

5. What Changes When This Approach Is Applied

When work is carried out IN, WITH, and FOR the community, everything changes.

✕ **Before:**

- The technician speaks
- The producer listens
- Producers are expected to apply recommendations

✓ **Now:**

- The technician listens
- The producer participates
- Solutions are built collaboratively
- Practices are tested on the farm
- Adjustments are made throughout the process

Extension ceases to be a process of transfer.

It becomes a process of co-construction.

6. Language Also Transforms

The change in approach is reflected even in language itself.

✕ "Do this."
✔ "Let us do this together."

✕ "You are wrong."
✔ "What you are doing is valuable, but we can improve it."

Words can either build or destroy processes.

7. Trust: The Invisible Element

None of this is possible without trust.

And trust cannot be imposed.

It is built through:

- Presence
- Respect
- Consistency
- Results

Without trust, there is no process.

Without process, there is no change.

8. The Real Impact of This Approach

When this approach is properly implemented, profound transformations occur:

- Greater adoption of practices
- Less resistance to change
- More sustainable processes
- Stronger community organization
- Real development

Change no longer depends exclusively on the technician.

It becomes part of the community itself.

9. A Necessary Reflection

Working IN, WITH, and FOR the community may sound simple.

But it requires transforming:

- The way we think
- The way we act
- The way we relate to people

It is not merely a technique.

It is an attitude toward development.

10. Central Principle of the Chapter

Development is not brought to the community.

It is built with the community, within its own territory, and for its own benefit.

If agricultural extension must be approached in this way, then a new question naturally emerges:

☞ How can technology be appropriately integrated into this approach without repeating the mistakes of the past?

Because one of the greatest problems has been treating technology as an isolated solution.

CHAPTER V
The technological illusion and the power of the systems approach
SOIL
WATER
PLANTS
ANIMALS
PEOPLE
MANAGEMENT
SYSTEMS APPROACH
75%
THE TECHNOLOGICAL ILLUSION
Technology as a magical solution
Focus on the sophisticated, not on what matters
Disconnection from the producer's reality
Short-term and dependent results
High costs, low impact, and limited sustainability
LESS ILLUSION
MORE SYSTEM
THE POWER OF THE SYSTEMS APPROACH
Understands the farm as an integrated system
Decisions based on local reality
Active participation and continuous learning
Sustainable results over time
Less dependency and greater resilience
Technology is important, but without understanding the system
— and without empowered people, there is no real transformation or sustainable development. —

CHAPTER V

The Technological Illusion and the Power of the Systems Approach

1. The Promise of Technology

Throughout history, technology has been presented as the great solution to the problems faced in rural areas.

New seeds. New breeds. New machinery. New digital tools.

Every innovation has arrived accompanied by a promise:

☞ to produce more, better, and with less effort.

And in many cases, that promise is real.

Technology possesses enormous potential.

But it also involves a significant risk:

Believing that technology alone can transform reality.

2. The Technological Illusion

When context is ignored, what can be called the technological illusion emerges.

It is the belief that introducing a technology is enough to solve a complex problem.

It is the assumption that:

- An improved seed will automatically increase production.
- A superior breed will by itself improve performance.
- A new piece of equipment guarantees greater efficiency.

Without asking the essential question:

☞ Is the system prepared to sustain that technology?

Technology itself does not fail.

What fails is the system within which it is being applied.

3. Lessons Learned from Experience

Rural areas have witnessed numerous failed attempts—not because of a lack of technology, but because of a lack of proper approach.

When the Seed Was Not Enough

Improved crop varieties with high productive potential were introduced.

But on many farms:

- Adequate fertilization did not exist.
- Proper agronomic management was absent.
- Necessary conditions for expressing their potential were lacking.

The result was:

☞ low yields
☞ frustration
☞ loss of confidence

When Genetics Exceeded the System

Animals with high productive potential were promoted.

But without:

- Adequate nutrition
- Proper sanitary management
- Favorable environmental conditions

The result was:

☞ poor performance
☞ high costs

☞ unsustainable systems

⬢ When the System Was Oversimplified

In order to increase production, trees were removed in many cases.

At first glance, this appeared to be a good decision.

However, over time:

- Heat stress in animals increased.
- Water availability declined.
- Biodiversity was lost.
- System resilience decreased.

The problem was not merely the decision itself.

The problem was failing to understand the system as a whole.

4. The New Risk: Advanced Technologies

Today, we face a new scenario.

Technologies such as:

- Drones
- Artificial intelligence
- Augmented Reality
- Virtual Reality
- Advanced genetics
- Precision agriculture
- Georeferencing

Offer enormous opportunities.

But they can also become new illusions.

The risk does not lie in advanced technology itself.

The risk lies in using it without solid foundations.

⚠ When this occurs:

- Investments fail to generate returns.
- Unrealistic expectations emerge.

- Small-scale producers are excluded.
- Trust is lost.

5. The Underlying Problem

The problem is not technology.

The problem is attempting to solve complex problems through isolated solutions.

Agricultural production does not depend on a single tool.

It depends on a system.

6. The Farm: A Living System

A farm is not a collection of independent parts.

It is a system in which everything is interconnected:

- Soil
- Water
- Crops
- Animals
- Climate
- Economy
- People

Every decision affects the others.

Every change generates consequences.

When one part is modified without understanding the whole, the system becomes unbalanced.

7. The Power of the Systems Approach

The systems approach transforms the way reality is understood.

Instead of asking:

☞ “What technology should I apply?”

The question becomes:

☞ “What does this system need in order to improve?”

This allows us to:

- Identify the real causes of problems
- Establish correct priorities
- Design integrated solutions
- Reduce risks

Systems do not improve simply by adding more things.

They improve when we understand how they function.

8. Technology with Purpose: From Basic to Advanced

Not all technologies play the same role.

🟤 **Basic Technology: The Foundation**

- Soil management
- Efficient water use
- Agronomic practices
- Basic animal and plant health management

☞ This is where some of the greatest opportunities for improvement exist.

🟡 **Intermediate Technology: Strengthening the System**

- Irrigation systems
- Infrastructure
- Improved technical management

☞ These technologies increase the efficiency of the system.

🔵 **Advanced Technology: Optimization**

- Drones
- Artificial intelligence
- Augmented and Virtual Reality
- Advanced genetics
- Precision agriculture

☞ These technologies enhance systems that are already consolidated.

Without a solid foundation, advanced technology loses meaning.

9. A Truth That Is Not Always Acknowledged

In many production systems:

☞ the principal problems are not solved with more technology.

They are solved by improving fundamental practices.

Field experience clearly demonstrates this:

- Improving planting density
- Properly feeding calves
- Maintaining trees on the farm

It is not always about doing new things.

Very often, it is about doing existing things better.

10. The Role of the Extension Agent in Relation to Technology

Extension agents should not become automatic promoters of technology.

They must be:

- System analysts
- Advisors
- Technical filters
- Facilitators of decision-making

Not everything new is necessary.

And not everything necessary is new.

11. Central Principle of the Chapter

Technology does not transform the system.

The system determines the impact of technology.

12. Final Reflection

The future of agriculture does not depend solely on having access to more technology.

It depends on:

- Better understanding systems
- Making better decisions

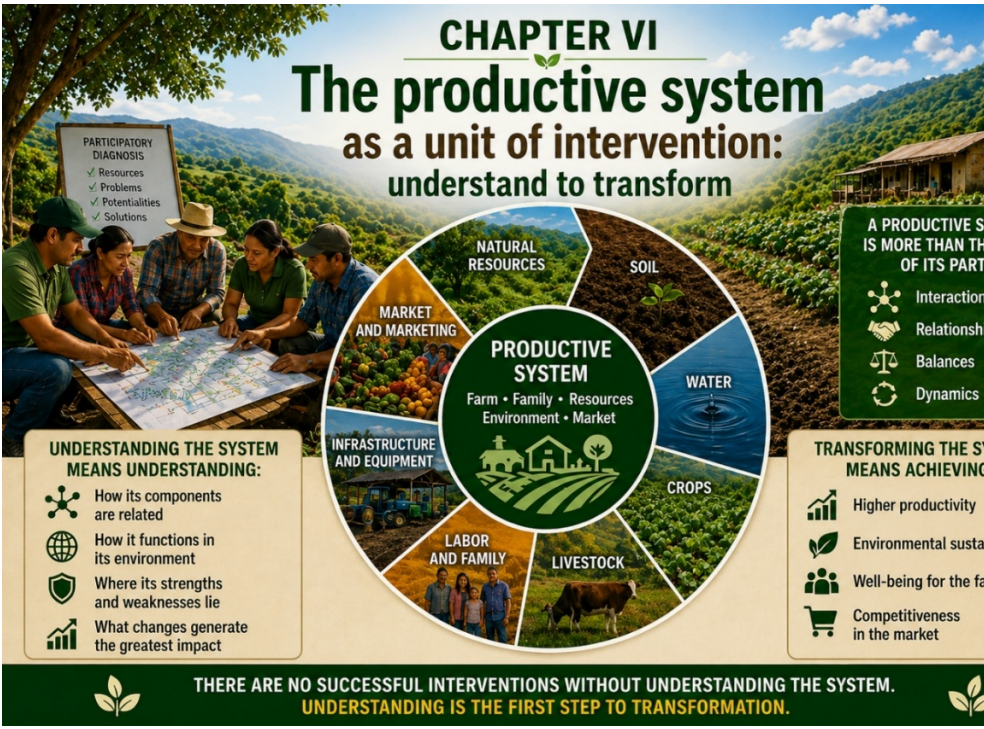
- Using available resources appropriately
- Integrating technical knowledge with local experience

True innovation is not always found in the most advanced technology.

Very often, it lies in what is most appropriate.

If the key lies in understanding the system, then a fundamental question emerges:

☞ How can that production system be analyzed in order to intervene correctly?



CHAPTER VI

The Production System as the Unit of Intervention: Understanding in Order to Transform

1. The Starting Point: Learning to See Rural Reality Differently

After understanding that technology alone does not transform reality and that everything depends on the system in which it is applied, a fundamental need emerges:

☞ learning to see the farm as it truly is.

Not as isolated plots.
Not as independent crops.
Not as separate activities.

But rather as a living, dynamic, and deeply interconnected system.

What is not understood cannot be transformed.
And what is not observed as a whole cannot truly be understood.

2. The Farm Is Not a Sum of Separate Parts

Many agricultural interventions have traditionally worked by components:

- Crops on one side

- Livestock on another
- Soil separately
- Water separately

But within the producer's reality, everything is interconnected.

A change in one element inevitably affects the others.

☞ Degraded soil reduces production.
☞ Lower production reduces income.
☞ Lower income limits decision-making.
☞ Limited decisions affect the entire system.

A farm is not simply a collection of activities.

It is a system in which every decision generates consequences.

3. The Production System: An Integrated Vision

A production system includes much more than what is immediately visible.

It is composed of multiple dimensions.

🌱 The Biophysical Component

- Soil
- Water
- Climate
- Vegetation

🌾 The Productive Component

- Crops
- Livestock
- Farm management

🧑🌾 The Human Component

- The producer
- The producer's family
- Experience
- Knowledge

💰 The Economic Component

- Costs
- Income
- Market access

🌍 **The Social Component**

- Community
- Organization
- Support networks

The system is not made up solely of land and production.

It is also shaped by people, decisions, and relationships.

4. The Problem Is Not Always Where It Appears to Be

One of the most common mistakes is attacking symptoms rather than causes.

☞ Low production may appear to be a seed problem…

But it may actually be related to:

- Poor soil quality
- Inadequate planting density
- Water shortages
- Economic constraints

☞ Livestock problems may appear to be sanitary issues…

But they may actually be linked to:

- Nutrition
- Management
- Climate stress

In rural systems, the visible problem is rarely the real problem.

5. The Art of Observation: The Most Powerful Tool

Before making recommendations, extension agents must learn to observe.

Not merely to look.

☞ To observe intentionally.

Observation means:

- Listening to the producer
- Watching how work is carried out
- Understanding why it is done that way
- Identifying patterns

The best diagnosis does not begin with speaking.

It begins with listening and observing.

6. Analyzing the System Step by Step

Understanding a production system does not necessarily require complex tools.

It requires clarity in the process.

🔍 **Step 1: Understanding the Farm**

- What does it produce?
- How does it produce?
- What resources are available?

Step 2: Understanding the Producer's Logic

- Why are these decisions being made?
- What limits the available options?
- What are the producer's real priorities?

🧩 **Step 3: Identifying Connections**

- How are soil, water, production, and economics related?
- What depends on what?

⚠ **Step 4: Detecting Key Constraints**

Not everything represents a critical problem.

☞ The important task is identifying what truly limits the functioning of the system.

🎯 **Step 5: Establishing Priorities**

It is impossible to change everything at once.

Change must begin where impact is greatest and risk is lowest.

7. The Importance of Simplicity

Very often, solutions are not found in complexity.

They are found in fundamentals.

Field experience clearly demonstrates this:

- Adjusting planting density
- Improving early calf nutrition
- Maintaining trees on the farm

Small changes can generate major results.

8. Validating on the Farm: Where Truth Emerges

A recommendation cannot be considered valid until it has been tested under real conditions.

Therefore:

- It begins on a small scale.
- Results are observed.
- Adjustments are made.
- Improvements are introduced.

The farm is the most important laboratory.

9. Technical Support and Follow-Up as Part of the Analysis

A production system is not static.

It constantly changes over time.

For that reason:

- Analysis is not an isolated moment.
- It is a continuous process.
- Understanding the system is not an event. It is an ongoing path.

10. The Role of the Extension Agent in This Process

The extension agent ceases to be:

✖ The person who arrives with ready-made answers.

And becomes:

✔ The one who helps discover
✔ The one who guides
✔ The one who accompanies the process

The objective is not simply to tell people what to do.

It is to understand what is realistically possible.

11. A Key Reflection

The greatest mistake in agricultural extension has not been a lack of knowledge.

It has been intervening without understanding.

A system cannot be improved if it is not understood.

And it cannot be understood without being immersed within it.

12. Central Principle of the Chapter

The quality of an intervention depends on the quality of the diagnosis.

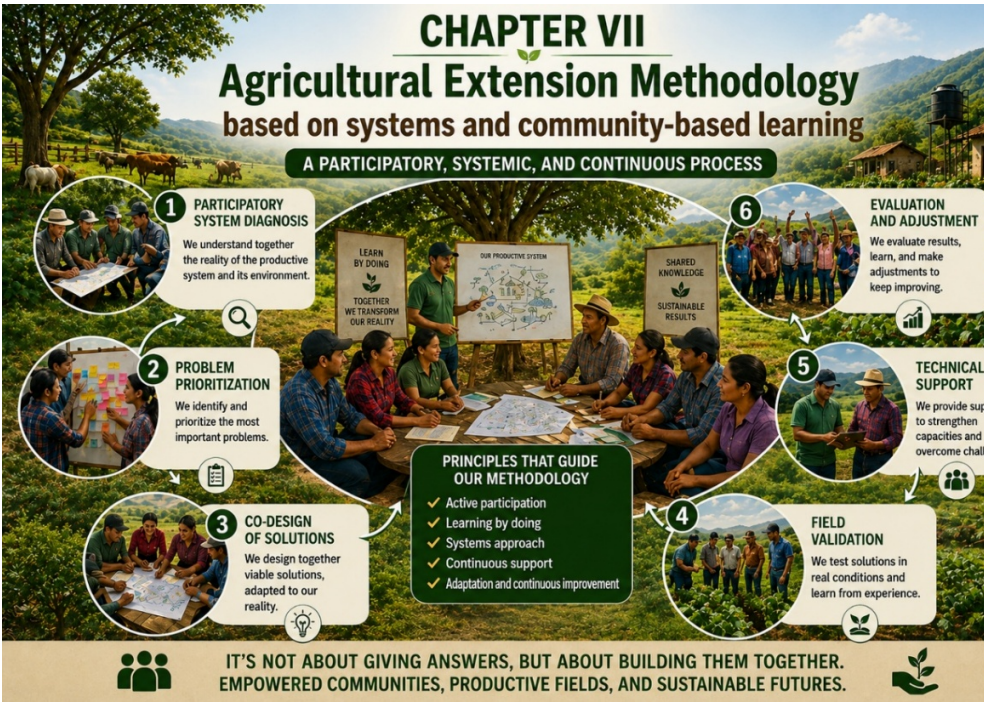
And the quality of the diagnosis depends on understanding the system as an integrated whole.

Once the production system is understood, a fundamental question emerges:

☞ How can intervention be carried out in an organized, effective, and sustainable way?

Because understanding alone is not enough.

☞ It is also necessary to act.


CHAPTER VII
Agricultural Extension Methodology
based on systems and community-based learning
A PARTICIPATORY, SYSTEMIC, AND CONTINUOUS PROCESS
1 PARTICIPATORY SYSTEM DIAGNOSIS
We understand together the reality of the productive system and its environment.
2 PROBLEM PRIORITIZATION
We identify and prioritize the most important problems.
3 CO-DESIGN OF SOLUTIONS
We design together viable solutions, adapted to our reality.
4 FIELD VALIDATION
We test solutions in real conditions and learn from experience.
5 TECHNICAL SUPPORT
We provide sup to strengthen capacities and overcome chall
6 EVALUATION AND ADJUSTMENT
We evaluate results, learn, and make adjustments to keep improving.
LEARN BY DOING
TOGETHER WE TRANSFORM OUR REALITY
OUR PRODUCTIVE SYSTEM
SHARED KNOWLEDGE
SUSTAINABLE RESULTS
PRINCIPLES THAT GUIDE OUR METHODOLOGY
Active participation
Learning by doing
Systems approach
Continuous support
Adaptation and continuous improvement
IT'S NOT ABOUT GIVING ANSWERS, BUT ABOUT BUILDING THEM TOGETHER.
EMPOWERED COMMUNITIES, PRODUCTIVE FIELDS, AND SUSTAINABLE FUTURES.

CHAPTER VII

Agricultural Extension Methodology Based on Systems Thinking and Community Learning

1. From Understanding to Action

Up to this point, the journey has made it possible to understand several fundamental elements:

- The strategic importance of the agricultural sector
- The historical mistakes of many intervention processes
- The need to place people at the center of change
- The principle of working IN, WITH, and FOR the community
- The farm understood as an integrated system

All of this inevitably leads to a key question:

☞ How can these principles be translated into practice effectively?

Because understanding alone is not enough.

☞ It is necessary to act.

Knowledge that does not become action does not transform reality.

2. More Than a Methodology: A Way of Working

The methodology proposed here should not be understood as a rigid formula.

It is not a mechanical sequence of steps.

Above all, it is a way of working based on:

- The producer's reality
- Understanding the production system
- Practical learning
- Continuous technical support and follow-up

It is not merely about applying tools.

It is about building processes together with people.

3. Principles That Sustain the Methodology

Before examining the phases of the process, it is important to understand the principles that give it coherence and meaning.

Systems Thinking

Do not intervene in isolated components.

Instead, understand the farm as an integrated system.

👥 Working with People

The producer is not a passive recipient.

The producer is the center of the process.

🌱 Learning by Doing

The farm is the principal learning environment.

🔄 Progressive Advancement

Sustainable change occurs step by step.

Continuous Technical Support and Follow-Up

The process requires ongoing guidance, support, and presence.

Without these principles, the methodology loses coherence.

4. The Phases of the Process

Although this methodology is not rigid, it can be organized into six

fundamental and interconnected phases.

◈ PHASE 1: Understanding Reality (Living Diagnosis)

🎯 More than collecting information, the goal is to understand.

Diagnosis is not simply about filling out forms or gathering data.

It involves:

- Listening
- Observing
- Understanding
- Analyzing together with the producer

☞ The extension agent must ask:

- How does this farm function?
- What limits the producer?
- Which practices are already working effectively?

Diagnosis is not conducted on the farm.

It is conducted with the producer.

◈ PHASE 2: Identifying What Truly Matters (Prioritization)

Not every problem has the same importance.

Not everything can be solved at once.

☞ The key is identifying:

- What most limits the system
- What generates the greatest impact
- What can realistically be transformed

Change does not begin where there are the most problems.

It begins where the greatest opportunities for improvement exist.

◈ PHASE 3: Building Solutions Together (Co-Design)

At this stage, a fundamental transformation occurs:

☞ The technician stops imposing.
☞ The producer stops being merely a recipient.

Both begin building solutions collaboratively.

The process involves analyzing:

- Available options
- Costs
- Risks
- Benefits
- Practical feasibility

The best solution is not necessarily the most sophisticated one.

It is the one the producer can implement and sustain over time.

◈ PHASE 4: Testing in Reality (Implementation)

Solutions are not validated in theory.

They are validated on the farm.

☞ Therefore:

- Implementation begins on a small scale
- Practices are tested under real conditions
- Results are observed
- Adjustments are made

The objective is not simply to recommend.

It is to experiment and learn together with the producer.

◈ PHASE 5: Being Present (Technical Support and Follow-Up)

This is one of the points where many processes most frequently fail.

After recommendations are given, producers are often left alone.

However, real change occurs precisely when:

- Questions arise
- Mistakes occur
- Adjustments become necessary
- Real difficulties appear

Technical support and follow-up are not complementary elements.

They are the heart of the process.

◈ PHASE 6: Learning and Improving (Evaluation and Adjustment)

Every action generates learning.

For this reason, it is necessary to analyze:

- What worked?
- What did not work?
- What can be improved?

Evaluation does not mean judging.

It means learning in order to improve continuously.

5. A Process That Never Ends

This methodology does not operate in a linear way.

It functions as a continuous cycle:

☞ Understand → Act → Learn → Adjust → Understand Again

Each cycle strengthens the system and improves the producer's capacities.

6. Real Change Happens Step by Step

One of the most common mistakes is trying to transform everything at once.

Reality demonstrates that sustainable change occurs progressively.

☞ The producer:

- Tests small improvements
- Gains confidence
- Observes results
- Gradually scales up changes

Major transformations begin with small, well-constructed steps.

7. The Role of the Extension Agent Within the Methodology

Within this approach, the technician ceases to be:

✖ The one who knows everything
✖ The one who simply tells others what to do

And becomes:

✔ Facilitator
✔ Companion in the process
✔ Guide
✔ Builder of processes

The extension agent does not directly transform the farm.

The extension agent helps the producer transform it.

8. The Role of the Producer

The producer ceases to be:

✖ A passive beneficiary
✖ A mere recipient of instructions

And becomes:

✔ The principal actor
✔ An experimenter
✔ A decision-maker
✔ A builder of change

Transformation occurs when the producer takes ownership of the process.

9. Integration of the IN, WITH, and FOR the Community Approach

This entire methodology is sustained by that fundamental principle:

IN the community → where reality takes place.
WITH the community → where solutions are built collectively.
FOR the community → where the process generates impact.

Without this approach, the methodology loses its essence.

10. A Fundamental Truth

Many processes fail not because the methodology itself is incorrect.

They fail because:

- It is not properly implemented
- Important phases are omitted
- Technical support and follow-up are absent
- The producer's context is not respected

The methodology does not fail.

What fails is the way it is implemented.

11. Central Principle of the Chapter

Effective agricultural extension does not consist of transferring technology.

It consists of building continuous processes of learning, action, and technical support together with producers and communities.

12. Final Reflection

Transforming rural areas is not an immediate task.

It is not simple.

But it is possible.

When:

- Reality is understood
- People are actively engaged
- Appropriate solutions are built
- Processes are continuously supported

☞ development ceases to be an isolated intervention and becomes a sustainable process of transformation.

Change does not occur through imposition.

It occurs when people participate, learn, and take ownership of the process.

If this methodology represents the path toward transforming agricultural extension, then a new question emerges:

☞ What element makes it possible for this entire process to truly function and remain sustainable over time?

The answer lies in a component that is often overlooked:

Technical Support and Follow-Up.

CHAPTER VIII
Technical support:
the link that makes change possible
IT IS NOT ABOUT SUPERVISING, IT IS ABOUT WALKING TOGETHER WITH THE PRODUCER
KEY ACTIONS OF TECHNICAL SUPPORT
Active listening
We understand the reality, needs, and goals of the producer.
Personalized advice
We provide recommendations adapted to the productive system and context.
Continuous follow-up
We accompany during implementation and solve doubts along the way.
Feedback
We evaluate results together and adjust to keep improving.
A PROCESS THAT BUILDS TRUST AND DELIVERS RESULTS
TRUST
JOINT LEARNING
IMPROVEMENT OF PRACTICES
SUSTAINABLE RESULTS
BENEFITS OF TECHNICAL SUPPORT
Greater adoption of practices
The producer understands, trusts, and applies what they learn.
Risk reduction
We anticipate problems and make decisions at the right opportunities.
Increased productivity and income
Better decisions lead to better results.
Empowerment of the producer
We develop skills and give the producer control of their system.
TECHNICAL SUPPORT IS NOT AN EXPENSE,
IT IS AN INVESTMENT THAT MAKES REAL AND LASTING CHANGE POSSIBLE.
TOGETHER, WE TRANSFORM KNOWLEDGE INTO RESULTS AND EFFORT INTO PROGRESS.

CHAPTER VIII

Technical Support and Follow-Up:

The Link That Makes Change Possible

1. The Great Gap in Agricultural Extension

For decades, agricultural extension has concentrated much of its effort on:

- Training
- Transferring knowledge
- Promoting technologies

However, in many cases, the results achieved have been limited.

Not because the knowledge is incorrect.
Not because the technology does not work.

The problem has been the absence of an essential element:

☞ technical support and follow-up.

When this component is missing, the process remains incomplete.

It is like planting a field and never returning to observe its development.

2. The Moment When Change Truly Happens

Change does not occur solely during:

- A workshop
- A training session
- A technical presentation

Real change happens on the farm.

It takes place when the producer:

- Attempts to apply what has been learned
- Faces doubts
- Makes mistakes
- Adjusts decisions
- Evaluates results

And precisely at that moment—when the technician is often no longer present—is when support is needed most.

3. What Does It Really Mean to Provide Support and Follow-Up?

Technical support and follow-up do not consist merely of making occasional visits.

Nor do they mean supervising or controlling producers.

☞ To provide support means to remain present throughout the process of change.

It implies:

- Walking alongside the producer
- Listening to concerns
- Analyzing decisions together
- Helping adjust practices and processes

It is not about directing change.

It is about sustaining it.

4. The Most Common Mistake: Leaving Producers Alone

One of the most common mistakes in agricultural extension has been this:

☞ training producers… and then withdrawing.

It is often assumed that producers:

- Fully understood everything
- Can implement changes entirely on their own
- Will obtain results immediately

But reality is far more complex.

Producers face:

- Uncertainty
- Economic limitations
- Production risks
- Family and financial pressures

Under these conditions, when technical support is absent:

☞ they return to the practices they already know
☞ they return to what they have always done

Not necessarily because they do not want to change, but because they cannot afford to take risks without support.

5. Technical Support Reduces Risk

Every decision made on a farm involves risk.

- A harvest may fail
- Income may decline
- Family stability may be affected

For this reason, technical support fulfills a fundamental role:

☞ reducing uncertainty and lowering the risk associated with change.

How does it do this?

- By validating decisions
- By correcting mistakes in time
- By adapting practices to the specific context
- By building confidence in the process

Producers do not change only when they understand.

They change when they feel secure enough to act.

6. Technical Support as a Continuous Process

Technical support and follow-up should not be understood as isolated events.

They are not occasional visits.

They are continuous processes.

☞ They must be:

- Frequent
- Close to the producer's reality
- Contextualized
- Flexible
- Adaptive

Because production systems constantly evolve.

What changes?

- Climatic conditions
- Market prices
- Family dynamics
- Producer needs

And technical support must evolve together with that reality.

7. Key Moments for Technical Support

There are specific moments when technical support becomes especially important.

🔍 **At the Beginning of Change**

When producers decide to implement a new practice.

⚠ **When Difficulties Arise**

When results are not as expected or unforeseen problems appear.

🔄 **During Adjustments**

When corrections, adaptations, or improvements become necessary.

📈 **When Results Begin to Appear**

In order to consolidate progress and scale up the process.

Providing support means knowing when to be present and how to contribute value at every stage.

8. The Role of the Extension Agent in Technical Support

Within this approach, the extension agent ceases to be a supervisor or inspector.

The extension agent becomes:

- An ally
- A guide
- A facilitator
- A source of technical and human support

This role requires:

- Listening more than speaking
- Understanding before recommending
- Adapting before imposing

The best technical support is not always the most visible.

But it is the support reflected in sustainable results.

9. Technical Support Is Also Human

Producers do not face only technical problems.

They also face:

- Doubts
- Fears
- Economic pressures
- Family expectations
- Fatigue and frustration

For this reason, providing support involves far more than giving recommendations.

It also requires:

- Respect
- Empathy

- Trust
- Commitment

Support is not provided only through technical knowledge.

It is also provided through humanity.

10. The Real Impact of Technical Support

When technical support and follow-up are properly implemented, the results become evident:

✔ Greater adoption of practices
✔ Lower abandonment of innovations
✔ Improved productive results
✔ Greater producer confidence
✔ More sustainable processes over time

Technical support transforms intention into concrete results.

11. The Relationship Between Technical Support and the Methodology

Without technical support:

- Diagnosis loses value
- Recommendations are not properly implemented
- Learning is interrupted
- The process loses continuity

With technical support:

- The process becomes stronger
- Producers learn through practice
- The system improves progressively

☞ Technical support is the bridge between methodology and results.

12. Integration with the IN, WITH, and FOR the Community Approach

◍ IN the community → because it requires real presence within the territory.
◍ WITH the community → because change is built together with producers.
◍ FOR the community → because it seeks sustainable results and real improvements.

☞ Technical support is what transforms this approach into concrete practice.

Without support and follow-up, the approach remains only discourse.

With support and follow-up, it becomes reality.

13. A Truth That Transforms the Way We Intervene

Many programs fail not because they are poorly designed.

They fail because:

☞ they do not adequately support and follow up on processes.

It is not enough to teach.

It is necessary to remain present, guide, and sustain change.

14. Central Principle of the Chapter

Technical support and follow-up are not complementary elements of agricultural extension.

They are the essential components that make change possible and sustainable over time.

15. Final Reflection

Agricultural development is not built through isolated interventions.

It is built through processes sustained over time.

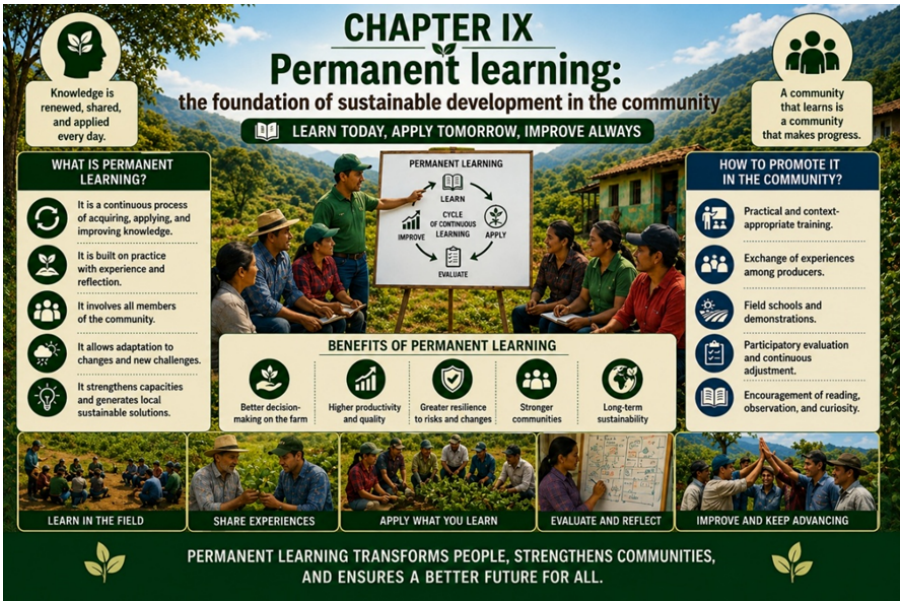
And every sustainable process requires presence, commitment, and continuity.

Providing support means believing in producers, understanding their reality, and walking alongside them until change becomes part of everyday life.

If technical support makes change possible, then another question naturally emerges:

☞ How can learning cease to depend entirely on the technician and instead remain and strengthen within the community itself?

The answer lies in building processes of continuous learning.


CHAPTER IX
Permanent learning:
the foundation of sustainable development in the community
LEARN TODAY, APPLY TOMORROW, IMPROVE ALWAYS
Knowledge is renewed, shared, and applied every day.
A community that learns is a community that makes progress.
WHAT IS PERMANENT LEARNING?
It is a continuous process of acquiring, applying, and improving knowledge.
It is built on practice with experience and reflection.
It involves all members of the community.
It allows adaptation to changes and new challenges.
It strengthens capacities and generates local sustainable solutions.
PERMANENT LEARNING
LEARN
CYCLE OF CONTINUOUS LEARNING
IMPROVE
APPLY
EVALUATE
HOW TO PROMOTE IT IN THE COMMUNITY?
Practical and context-appropriate training.
Exchange of experiences among producers.
Field schools and demonstrations.
Participatory evaluation and continuous adjustment.
Encouragement of reading, observation, and curiosity.
BENEFITS OF PERMANENT LEARNING
Better decision-making on the farm
Higher productivity and quality
Greater resilience to risks and changes
Stronger communities
Long-term sustainability
LEARN IN THE FIELD
SHARE EXPERIENCES
APPLY WHAT YOU LEARN
EVALUATE AND REFLECT
IMPROVE AND KEEP ADVANCING
PERMANENT LEARNING TRANSFORMS PEOPLE, STRENGTHENS COMMUNITIES, AND ENSURES A BETTER FUTURE FOR ALL.

CHAPTER IX

Permanent Learning:

The Foundation of Sustainable Community Development

1. Beyond Technical Support: A New Challenge

Technical support and follow-up are essential for change to occur.

However, an even deeper question emerges:

☞ What happens when the technician is no longer present?

If learning depends exclusively on the extension agent:

- The process weakens
- Change loses continuity
- Sustainability disappears

True development begins when learning no longer depends solely on the technician and instead becomes part of the community itself.

2. The Limitation of the Traditional Model

For a long time, agricultural extension has operated under a logic of dependency:

- The technician teaches

- The producer learns
- The technician leaves
- The process stops

This model presents an obvious limitation:

☞ it is not sustainable.

Any process that depends exclusively on one person eventually weakens when that person is no longer present.

3. The New Approach: Learning Communities

Real transformation occurs when learning is:

- Shared
- Discussed
- Adapted
- Multiplied

Within the community itself.

☞ When one producer learns, a single farm improves.
☞ When a community learns, an entire territory is transformed.

Individual knowledge generates improvement.

Collective knowledge generates transformation.

4. Learning as a Living Process

Learning in rural communities is not static.

It is not an isolated event.
It is not merely a training session.

It is a continuous process that occurs when:

- Experiences are exchanged
- Results are observed
- Mistakes are analyzed
- Solutions are shared

Learning does not end when someone teaches.

It truly begins when knowledge is put into practice.

5. Spaces Where Learning Takes Place

Continuous learning requires spaces that make it possible.

Not necessarily complex structures, but living spaces within the community.

🌱 Farmer Field Schools

Spaces where people learn by doing:

- In real plots
- Under real conditions
- While facing real problems

👥 Producer Groups

Spaces where people share:

- Experiences
- Results
- Difficulties
- Lessons learned

🌟 Leadership, Entrepreneurship, and Innovation Schools

Spaces designed to strengthen capacities for:

- Decision-making
- Innovation
- Organization
- Building development

Development does not occur only on the farm.

It is also built within the community.

6. The Power of Learning Among Producers

One of the most effective learning mechanisms is exchange among producers themselves.

This happens because they:

- Speak the same language
- Share similar conditions

- Understand each other's realities more deeply
- Generate trust

☞ Very often, producers trust the experience of another producer more than any technical explanation.

When a producer demonstrates concrete results, the community learns.

7. From Recipients to Multipliers

The objective is not only for producers to learn.

The objective is also for them to:

☞ teach
☞ share
☞ multiply knowledge

When this happens:

- Knowledge expands
- Impact grows
- The process gains autonomy

Development accelerates when knowledge circulates within the community.

8. The Role of the Extension Agent in Continuous Learning

Within this approach, the extension agent once again transforms his or her role.

The extension agent is no longer only a technical advisor.

Now, the extension agent becomes:

✔ A facilitator of learning processes
✔ A connector among actors
✔ A promoter of community spaces

The role is no longer to teach permanently.

It is to enable people to learn from one another.

The best extension agent is not the one who teaches the most.

It is the one who enables the community to continue learning even when he or she is no longer present.

9. Trust as the Foundation of Collective Learning

Community learning can only develop where there is:

- Trust
- Respect
- Openness
- Willingness to share

Without trust:

- Mistakes are not shared
- Real problems are not discussed
- Collective solutions are not built

Without trust, there is no community.

And without community, there can be no sustainable learning.

10. Learning Strengthens Resilience

A community that learns continuously:

- Adapts more effectively to change
- Responds more effectively to crises and challenges
- Faces climate impacts with greater capacity
- Innovates continuously

Learning does not only improve production.

It also strengthens the ability to resist, adapt, and move forward.

11. Integration with the IN, WITH, and FOR the Community Approach

◍ IN the community → because that is where learning occurs.
◍ WITH the community → because knowledge is built collectively.
◍ FOR the community → because learning is directed toward well-being and development.

☞ Continuous learning allows this approach to remain sustainable over time.

Without continuous learning, processes stop.

With continuous learning, processes evolve.

12. A Fundamental Truth

Sustainable agricultural development does not depend solely on:

- Technology
- Financial resources
- Projects

It depends on something much deeper:

☞ the capacity to learn continuously.

Those who stop learning stop advancing.

Those who learn continuously strengthen their ability to transform reality.

13. Central Principle of the Chapter

Sustainable development is not achieved simply by transferring knowledge.

It is built by forming communities capable of learning, adapting, and improving continuously.

14. Final Reflection

The future of the agricultural sector does not depend exclusively on:

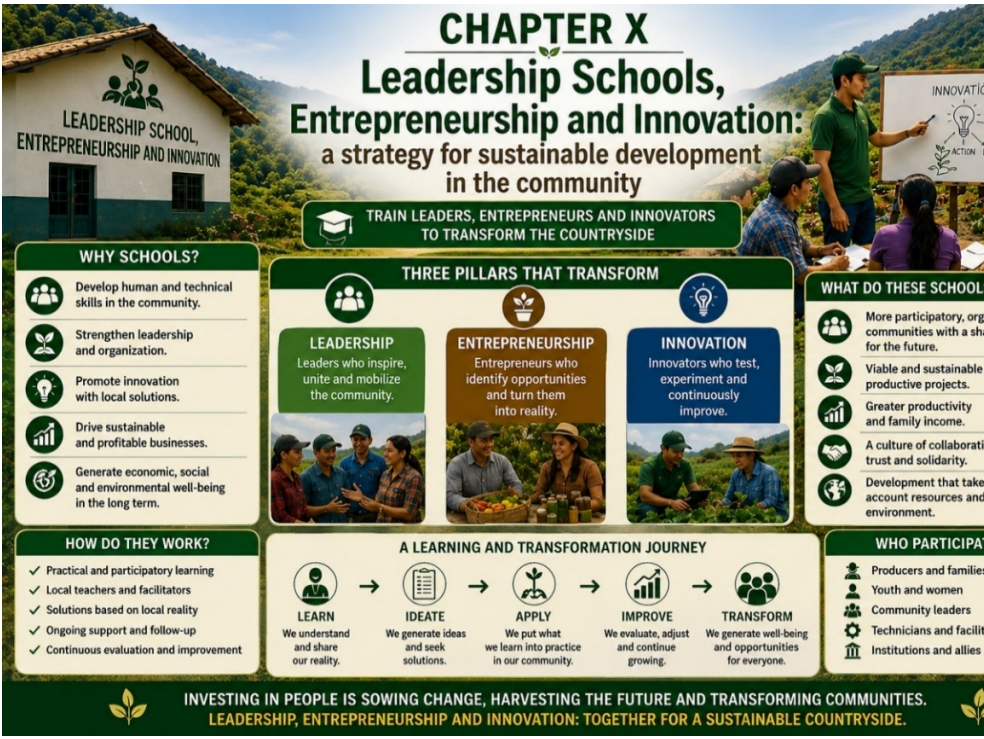
- New technologies
- More projects
- Larger investments

It depends on something even more powerful:

☞ people who learn,
☞ communities that share,
☞ systems that evolve.

When a community learns continuously, development ceases to be a temporary project.

It becomes a way of life.


CHAPTER X
Leadership Schools, Entrepreneurship and Innovation:
a strategy for sustainable development in the community
LEADERSHIP SCHOOL, ENTREPRENEURSHIP AND INNOVATION
TRAIN LEADERS, ENTREPRENEURS AND INNOVATORS TO TRANSFORM THE COUNTRYSIDE
WHY SCHOOLS?
Develop human and technical skills in the community.
Strengthen leadership and organization.
Promote innovation with local solutions.
Drive sustainable and profitable businesses.
Generate economic, social and environmental well-being in the long term.
THREE PILLARS THAT TRANSFORM
LEADERSHIP
Leaders who inspire, unite and mobilize the community.
ENTREPRENEURSHIP
Entrepreneurs who identify opportunities and turn them into reality.
INNOVATION
Innovators who test, experiment and continuously improve.
WHAT DO THESE SCHOOL
More participatory, org communities with a sh for the future.
Viable and sustainable productive projects.
Greater productivity and family income.
A culture of collaborati trust and solidarity.
Development that take account resources and environment.
HOW DO THEY WORK?
Practical and participatory learning
Local teachers and facilitators
Solutions based on local reality
Ongoing support and follow-up
Continuous evaluation and improvement
A LEARNING AND TRANSFORMATION JOURNEY
LEARN
We understand and share our reality.
IDEATE
We generate ideas and seek solutions.
APPLY
We put what we learn into practice in our community.
IMPROVE
We evaluate, adjust and continue growing.
TRANSFORM
We generate well-being and opportunities for everyone.
WHO PARTICIPA
Producers and familie
Youth and women
Community leaders
Technicians and facili
Institutions and allies
INVESTING IN PEOPLE IS SOWING CHANGE, HARVESTING THE FUTURE AND TRANSFORMING COMMUNITIES.
LEADERSHIP, ENTREPRENEURSHIP AND INNOVATION: TOGETHER FOR A SUSTAINABLE COUNTRYSIDE.

CHAPTER X

Leadership, Entrepreneurship, and Innovation Schools:

A Strategy for Sustainable Community Development

Before developing this chapter, it is important to recognize and value the contribution of Dr. Omelio Borroto Leal, a distinguished professional with extensive international experience, who has been the principal promoters and facilitators of the Leadership, Entrepreneurship, and Innovation Schools.

1. Introduction: Developing People to Transform Realities

Sustainable agricultural development does not depend solely on improving production techniques or incorporating new technologies.

Above all, it depends on people.

On their capacity to:

- Think
- Make decisions
- Organize themselves
- Innovate

- Build solutions

Experience accumulated across different territories demonstrates that production systems improve when the people who manage them are also strengthened.

Within this context, the Leadership, Entrepreneurship, and Innovation Schools emerge as a concrete response to a profound need:

☞ strengthening human capacities capable of sustaining development over time.

2. The Underlying Problem: Development Without Human Development

Many agricultural extension programs have succeeded in:

- Transferring technical knowledge
- Improving certain production practices
- Introducing technologies

However, they have frequently neglected one essential component:

☞ strengthening human capital.

When this element is absent:

- Change is not sustained
- Innovation loses continuity
- Dependency increases

Without prepared and empowered people, sustainable development cannot exist.

3. What Are the Leadership, Entrepreneurship, and Innovation Schools?

These are community-based learning spaces designed to:

- Develop human capacities
- Strengthen local leadership
- Promote entrepreneurship
- Foster innovation

They are not traditional classrooms.

They are not isolated training events.

☞ They are living learning processes built within the community itself.

The objective is not merely to transmit knowledge.

It is to develop people capable of transforming their own environment.

4. Principles That Guide the Schools

The Schools are grounded in principles consistent with the overall approach of this book.

👥 Learning from Experience

Knowledge is built from practice and from the realities of the participants themselves.

Collective Learning

Learning is participatory, collaborative, and shared.

🌱 Learning for Action

Every learning experience must translate into concrete action.

🔁 Continuous Learning

Education is not an isolated event.

It is an ongoing process.

🌍 Territorial Approach

Work is carried out from within the community and for the benefit of the community.

The Schools do not simply develop knowledge.

They build capacities for life and for development.

5. Fundamental Components of the Schools

The Schools integrate three essential dimensions.

🌟 5.1 Leadership

This component seeks to develop people capable of:

- Making decisions
- Influencing positively
- Mobilizing others
- Building a vision for the future

Without leadership, collective transformation cannot occur.

5.2 Entrepreneurship

This component promotes the capacity to:

- Identify opportunities
- Generate productive initiatives
- Improve incomes
- Create value within the community

Development also means creating opportunities.

5.3 Innovation

This component strengthens the capacity to:

- Think differently
- Adapt solutions
- Improve continuously
- Solve problems

Innovation does not necessarily mean doing entirely new things.

Very often, it means doing existing things better.

6. How the Schools Function in Practice

The Schools operate within the community through different forms of collective work.

Regular Learning Sessions

Spaces where relevant topics are explored through:

- Dialogue
- Reflection
- Practical exercises
- Exchange of experiences

Reality-Based Learning

The process begins with:

- Real problems
- Local experiences

- Concrete territorial situations

👥 Active Participation

Participants:

- Express opinions
- Analyze
- Propose
- Build solutions together

🔄 Practical Application

Every learning experience must translate into:

☞ concrete actions on the farm and within the community.

Learning without application does not generate transformation.

7. Relationship with Agricultural Extension

The Schools do not replace agricultural extension.

They strengthen it.

They make it possible to:

- Consolidate technical learning
- Strengthen human capacities
- Ensure continuity of processes
- Generate long-term sustainability

☞ They constitute a bridge between:

- Technical knowledge
- Human development
- Community transformation

Agricultural extension improves productive practices.

The Schools strengthen people and communities.

8. Community Impact

When the Schools function properly, they generate significant results:

✔ Stronger local leadership

✔ Greater community organization
✔ Increased productive initiatives
✔ Greater innovation capacity
✔ More sustainable processes over time

Change no longer depends exclusively on the technician.

It becomes embedded within the community itself.

9. The Role of the Facilitator

The facilitator within the Schools does not function as a traditional instructor.

Instead, the facilitator becomes:

✔ A guide
✔ A motivator
✔ A facilitator of processes
✔ A promoter of reflection

The role requires:

- Listening
- Motivating
- Guiding
- Accompanying

Facilitators do not create followers.

They help develop leaders.

10. Integration with the IN, WITH, and FOR the Community Approach

The Schools represent a concrete expression of this approach.

IN the community → because they operate within the territory.
WITH the community → because they promote active participation and collective construction.
FOR the community → because they are oriented toward development and community well-being.

☞ The Schools transform this approach into a living practice.

11. A Transformative Vision

The Schools should not be understood as isolated projects.

They are a development strategy.

They make it possible to move from:

- Dependency toward autonomy
- Intervention toward collective construction
- Individual learning toward community learning

True development begins when people discover their own capacity to transform reality.

12. Central Principle of the Chapter

Sustainable agricultural development requires not only improving production systems, but also developing people with leadership, entrepreneurial capacity, and innovation skills within their communities.

13. Final Reflection

The future of rural areas does not depend solely on:

- More technology
- More resources
- More projects

It depends on something much deeper:

☞ people capable of leading,
☞ undertaking initiatives,
☞ innovating,
☞ and building development from within their communities.

When one person changes, a farm improves.

When many people change, entire communities are transformed.

CHAPTER XI

Practical Tools for the Implementation of Agricultural Extension

1. From Theory to Practice

Throughout this book, a central idea has been emphasized repeatedly:

☞ Agricultural extension is not merely about transferring knowledge.

It is about building processes of transformation together with producers and communities.

However, for these processes to move beyond discourse and become reality, practical tools are required.

Not tools understood merely as forms or instruments, but as mechanisms that facilitate:

- Understanding
- Participation
- Decision-making
- Learning
- Action

- Continuous improvement

Without practical tools, methodologies remain theoretical.

Without practical application, transformation does not occur.

2. Tools Must Serve the Process

One of the most common mistakes in many extension programs has been placing excessive emphasis on tools while neglecting the process itself.

Forms are completed.
Data are collected.
Reports are generated.

But meaningful transformation does not necessarily occur.

☞ A tool only has value when it helps improve decision-making and strengthen learning processes.

Tools should not become bureaucratic requirements disconnected from reality.

They must serve producers and communities.

3. Characteristics of Effective Tools

Not every tool is useful in every context.

For a tool to truly contribute to agricultural extension, it should possess certain characteristics.

✓ **Simple**

It must be easy to understand and apply.

Complexity often becomes a barrier.

✓ **Practical**

It must solve real problems and support concrete decisions.

✓ **Contextualized**

It must adapt to local conditions and the producer's reality.

✓ **Participatory**

It must encourage the active involvement of producers.

✓ **Flexible**

It must allow adjustments according to circumstances and evolving realities.

✓ **Action-Oriented**

It must contribute to practical improvement processes.

A tool that is not used to make decisions or generate learning loses its purpose.

4. Practical Tools for Agricultural Extension

The following tools are not presented as rigid models.

They are references that can be adapted according to context, territory, and production systems.

🔍 **4.1 Participatory System Diagnosis**

Purpose

To understand the production system together with the producer.

What Does It Analyze?

- Available resources
- Main productive activities
- System constraints
- Existing opportunities
- Relationships among components

Why Is It Important?

Because interventions should not begin with assumptions.

They should begin with understanding reality.

☞ The best diagnosis is not the one with the most information.

It is the one that best explains how the system functions.

🗺 **4.2 Farm Mapping**

Purpose

To visualize the farm as an integrated system.

What Does It Include?

- Crops
- Livestock areas

- Water sources
- Infrastructure
- Forest areas
- Critical zones

Benefits

- Facilitates understanding of the territory
- Helps identify problems and opportunities
- Supports planning and decision-making

Very often, seeing the system visually allows people to understand it more clearly.

📊 4.3 Problem Prioritization Matrix

Purpose

To identify which problems should be addressed first.

What Does It Evaluate?

- Level of impact
- Urgency
- Feasibility of solution
- Associated risk

Why Is It Necessary?

Because not everything can be solved simultaneously.

The key is identifying where intervention can generate the greatest impact with the lowest risk.

🌱 4.4 Demonstration Plots and Learning Areas

Purpose

To validate practices under real conditions.

Characteristics

- Developed directly on farms
- Managed together with producers

- Used for observation and collective learning

Importance

Producers trust more in what they see than in what they are told.

The field itself becomes the classroom.

🖮 4.5 Technical Support and Follow-Up Plans

Purpose

To organize the support process over time.

What Should They Include?

- Visit schedules
- Monitoring activities
- Key recommendations
- Evaluation of progress
- Necessary adjustments

Why Are They Important?

Because sustainable change requires continuity.

Without follow-up, processes weaken.

👥 4.6 Community Learning Groups

Purpose

To strengthen collective learning.

Activities May Include:

- Experience exchange
- Joint analysis of problems
- Observation of results
- Discussion of solutions

Benefits

- Builds trust
- Facilitates knowledge sharing
- Strengthens community organization

Learning becomes more powerful when it is shared.

📈 4.7 Simple Monitoring Indicators

Purpose

To evaluate progress and support decision-making.

Examples

- Production levels
- Productivity
- Adoption of practices
- Reduction of losses
- Income improvements

Important Principle

Indicators should not be designed solely for reports.

They should help producers understand whether improvements are actually occurring.

💬 4.8 Communication and Reflection Tools

Purpose

To facilitate dialogue and understanding.

Examples

- Community meetings
- Participatory discussions
- Visual materials
- Local language explanations
- Practical examples

Why Are They Important?

Because communication is not simply about speaking.

It is about ensuring understanding.

5. Technology as a Supporting Tool

Technology can strengthen the use of practical tools.

For example:

- Mobile applications
- Geographic information systems
- Digital monitoring systems
- Artificial intelligence tools
- Drones and sensors

However, technology should not replace human processes.

☞ Technology should support the system, not dominate it.

The most advanced tool is useless if the process itself is weak.

6. The Most Important Tool: The Extension Agent's Capacity to Listen

Although many practical instruments exist, one tool remains indispensable:

☞ the ability to listen.

No form, application, or technological platform can replace:

- Observation
- Dialogue
- Trust
- Human understanding

The best tools are ineffective when people are not understood.

7. Integrating Tools Within the Methodology

Tools should not be applied in isolation.

They must be integrated into the broader process:

- Diagnosis
- Prioritization
- Co-design
- Implementation
- Technical support and follow-up
- Evaluation

When tools are disconnected from the process, they lose effectiveness.

When integrated properly, they strengthen transformation.

8. Common Mistakes in the Use of Tools

Some of the most frequent mistakes include:

✖ Using excessively complex tools
✖ Collecting information that is never used
✖ Prioritizing reports over learning
✖ Applying the same tools everywhere without adaptation
✖ Turning tools into bureaucratic procedures

A tool should simplify processes, not complicate them.

9. Central Principle of the Chapter

Practical tools are valuable only when they strengthen understanding, participation, learning, and decision-making within real transformation processes.

10. Final Reflection

Transforming agricultural extension does not depend solely on having more tools.

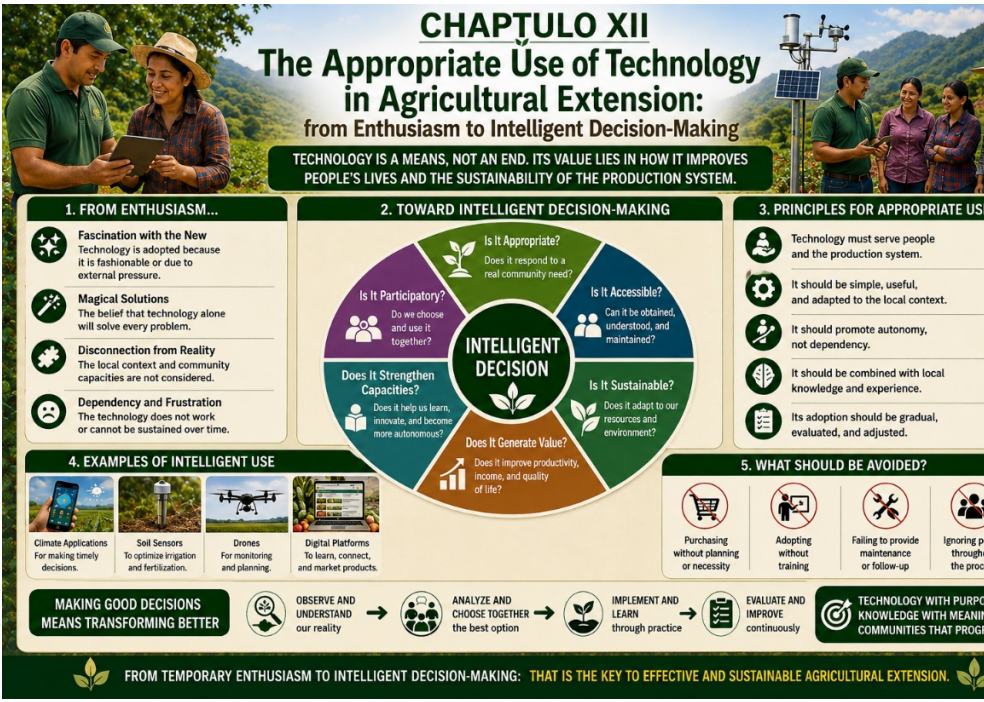
It depends on using the right tools appropriately, at the right moment, and within the right process.

The true value of a tool does not lie in its sophistication.

It lies in its capacity to help people better understand their reality and improve it sustainably.

Because in the end, tools do not transform rural areas.

☞ People do.


CHAPTULO XII
The Appropriate Use of Technology in Agricultural Extension:
from Enthusiasm to Intelligent Decision-Making
TECHNOLOGY IS A MEANS, NOT AN END. ITS VALUE LIES IN HOW IT IMPROVES PEOPLE'S LIVES AND THE SUSTAINABILITY OF THE PRODUCTION SYSTEM.
1. FROM ENTHUSIASM...
Fascination with the New
Technology is adopted because it is fashionable or due to external pressure.
Magical Solutions
The belief that technology alone will solve every problem.
Disconnection from Reality
The local context and community capacities are not considered.
Dependency and Frustration
The technology does not work or cannot be sustained over time.
2. TOWARD INTELLIGENT DECISION-MAKING
INTELLIGENT DECISION
Is It Appropriate?
Does it respond to a real community need?
Is It Accessible?
Can it be obtained, understood, and maintained?
Is It Sustainable?
Does it adapt to our resources and environment?
Does It Generate Value?
Does it improve productivity, income, and quality of life?
Does It Strengthen Capacities?
Does it help us learn, innovate, and become more autonomous?
Is It Participatory?
Do we choose and use it together?
3. PRINCIPLES FOR APPROPRIATE US
Technology must serve people and the production system.
It should be simple, useful, and adapted to the local context.
It should promote autonomy, not dependency.
It should be combined with local knowledge and experience.
Its adoption should be gradual, evaluated, and adjusted.
4. EXAMPLES OF INTELLIGENT USE
Climate Applications
For making timely decisions.
Soil Sensors
To optimize irrigation and fertilization.
Drones
For monitoring and planning.
Digital Platforms
To learn, connect, and market products.
5. WHAT SHOULD BE AVOIDED?
Purchasing without planning or necessity
Adopting without training
Failing to provide maintenance or follow-up
MAKING GOOD DECISIONS MEANS TRANSFORMING BETTER
OBSERVE AND UNDERSTAND our reality
ANALYZE AND CHOOSE TOGETHER the best option
IMPLEMENT AND LEARN through practice
EVALUATE AND IMPROVE continuously
FROM TEMPORARY ENTHUSIASM TO INTELLIGENT DECISION-MAKING: THAT IS THE KEY TO EFFECTIVE AND SUSTAINABLE AGRICULTURAL EXTENSION.

CHAPTER XII

The Appropriate Use of Technology in Agricultural Extension:

From Enthusiasm to Intelligent Decision-Making

1. Technology: Opportunity or Illusion?

Technology has always played an important role in the transformation of agriculture.

From basic tools to advanced digital systems, every technological innovation has promised improvements in:

- Production
- Productivity
- Efficiency
- Competitiveness

Today, the agricultural sector is experiencing an unprecedented technological expansion.

Technologies such as:

- Drones
- Artificial intelligence

- Precision agriculture
- Georeferencing
- Sensors
- Digital platforms
- Robotics
- Augmented and Virtual Reality

Are increasingly present in discussions about the future of agriculture.

However, alongside these opportunities, a fundamental question emerges:

☞ Is technology truly solving the most important problems faced by producers?

This question is essential because enthusiasm for technology can sometimes overshadow understanding of reality.

2. The Risk of Technological Enthusiasm Without Analysis

One of the greatest risks in agricultural extension is confusing innovation with transformation.

Not every new technology automatically generates development.

In many cases, technologies are promoted:

- Without sufficient contextual analysis
- Without understanding producers' actual needs
- Without evaluating economic viability
- Without solid technical foundations within the system

This creates what can be described as technological enthusiasm without strategic decision-making.

The problem is not technology itself.

The problem is adopting technology without understanding the system in which it will operate.

3. Technology Is Not the Starting Point

One of the most common mistakes has been beginning with the technology itself instead of beginning with the problem.

The correct question is not:

✖ “What technology can we introduce?”

The correct question is:

✔ “What problem needs to be solved?”

Only after clearly understanding the problem should technology be evaluated as a possible solution.

Technology should serve the system.

The system should not be forced to adapt to technology.

4. The Foundation Before the Advanced

Many production systems still face basic limitations related to:

- Soil management
- Water management
- Animal nutrition
- Agronomic practices
- Farm organization
- Technical support and follow-up

Under such conditions, introducing advanced technologies without strengthening the foundations often generates poor results.

☞ A drone cannot compensate for degraded soil.
☞ Artificial intelligence cannot replace weak farm management.
☞ Precision agriculture cannot solve fundamental organizational problems.

Advanced technologies generate value only when the basic foundations of the system are already functioning adequately.

5. A Strategic Vision of Technology

Technology should not be viewed in absolute terms—neither rejected nor idealized.

It should be analyzed strategically.

This means understanding:

- What problem it addresses
- What value it generates
- What conditions are required for its use

- What costs it involves
- What risks it creates
- Whether producers can realistically sustain it over time

Not every technology is appropriate for every context.

The most sophisticated technology is not always the best solution.

Very often, the most appropriate technology is the one that producers can understand, apply, and sustain.

6. A Progressive Logic for Technological Integration

Within agricultural extension, technology should be integrated progressively.

🟤 Basic Technologies: The Foundation

These are technologies related to essential management practices:

- Soil conservation
- Water management
- Basic sanitation
- Crop management
- Pasture management
- Efficient use of local resources

☞ This level often offers the greatest opportunities for improvement.

🟡 Intermediate Technologies: Strengthening Efficiency

These technologies improve system performance and organization.

Examples include:

- Irrigation systems
- Improved infrastructure
- Mechanical equipment
- Improved storage systems
- Digital management tools

☞ Their role is to strengthen and optimize the functioning of the system.

🔵 Advanced Technologies: Optimization and Precision

These technologies include:

- Drones
- Artificial intelligence
- Precision agriculture
- Georeferencing
- Sensors
- Robotics
- Advanced data systems

☞ Their function is to optimize systems that are already technically and organizationally consolidated.

Without strong foundations, advanced technology loses effectiveness.

7. Technology Must Remain Human-Centered

One of the greatest dangers of excessive technologization is forgetting that agricultural development is fundamentally a human process.

Technology can:

- Facilitate decisions
- Improve efficiency
- Generate information
- Optimize processes

But it cannot replace:

- Human judgment
- Experience
- Community learning
- Trust
- Technical support and follow-up

Technology supports processes.

People transform systems.

8. The Digital Divide and Exclusion Risks

Not all producers have equal access to advanced technologies.

Many rural communities still face:

- Limited internet connectivity
- Restricted access to equipment
- Low digital literacy
- Economic limitations

When technology is promoted without considering these realities, exclusion increases.

The risk is creating agriculture that only some producers can access.

Sustainable development requires technologies that are inclusive, adaptable, and accessible.

9. The Role of the Extension Agent in Technology Use

The extension agent should not become merely a promoter of technological products.

The extension agent must become:

- A critical analyst
- A facilitator of decision-making
- A guide for appropriate technological selection
- A bridge between innovation and reality

This requires the capacity to evaluate not only whether a technology works technically, but also whether it is appropriate socially, economically, and territorially.

Not all innovation generates development.

Only appropriate innovation does.

10. Questions That Must Be Asked Before Introducing Technology

Before promoting any technology, several fundamental questions should be considered:

- What specific problem does it solve?
- Is the system prepared to support it?
- Can producers sustain it economically?

- Does it generate real value?
- Does it reduce or increase risk?
- Does it strengthen autonomy or dependency?
- Is it accessible to the community?
- Does it complement or weaken human processes?

Technology should not be adopted because it is fashionable.

It should be adopted because it is useful.

11. Real Innovation Is Not Always the Most Advanced

One of the most important lessons from field experience is this:

☞ Real innovation is not always found in cutting-edge technology.

Very often, innovation lies in:

- Improving basic practices
- Organizing producers
- Strengthening learning processes
- Improving decision-making
- Building trust
- Integrating knowledge

Many of the most significant transformations in agriculture have not resulted from highly sophisticated technologies, but from improving fundamental processes.

12. Integration with the Systems Approach

Technology can only be properly understood within the framework of the production system.

Its impact depends on:

- Soil conditions
- Water availability
- Producer capacities
- Economic conditions
- Organization

- Technical support
- Community participation

Technology does not operate in isolation.

It operates within systems.

For this reason, the systems approach remains essential.

13. Integration with the IN, WITH, and FOR the Community Approach

🟤 IN the community → because technologies must be validated under real conditions.
🟠 WITH the community → because producers must participate in decisions.
🟢 FOR the community → because technology should improve quality of life and sustainability.

☞ Technology only generates development when it serves people and communities.

14. Central Principle of the Chapter

Technology should not be adopted because it is advanced, modern, or attractive.

It should be adopted when it is appropriate, useful, sustainable, and integrated into the reality of the production system and the community.

15. Final Reflection

The future of agricultural extension does not depend solely on incorporating more technology.

It depends on making wiser decisions regarding:

- Which technologies to use
- When to use them
- How to use them
- And for whom they are intended

Technology can accelerate processes.

But it cannot replace understanding, participation, learning, and human commitment.

The true challenge is not technological modernization alone.

The true challenge is ensuring that technology contributes to building more

humane, sustainable, and intelligent agricultural systems.

CHAPTUR XIII
Real Cases and Lessons Learned:
the voice of the field as a guide for development
REAL STORIES, COLLECTIVE DECISIONS, AND TRANSFORMATIVE RESULTS
"No one knows the countryside better than those who work it every day."
A COMMUNITY THAT LEARNS AND DECIDES, A COMMUNITY THAT PROGRESSES.
Listen
Learn
Participate
Act
Achieve together
WHY IS IT IMPORTANT?
Because our agricultural extension proposal works when it is built together with the community.
Because every territory has its own valuable solutions and processes.
Because sharing experiences helps prevent mistakes and accelerates learning.
Because the field itself is the best guide for deciding what to do and how to do it.
Because recognizing what works motivates and inspires hope.
REAL CASES THAT INSPIRE
1. ORGANIZATION THAT TRANSFORMS
Strengthening community organization
Improved commercialization
Greater negotiation capacity and improved income
2. INNOVATION THAT SOLVES
Introduction of appropriate technologies
Increased productivity at lower cost
Adaptation to climate change
3. LEARNING THAT ENDURES
Farmer field schools and learning by doing
More practical knowledge applied in daily decisions
Youth and women as active protagonists
4. ALLIANCES THAT MULTIPLY
Joint work with institutions and strategic allies
Access to resources and timely technical assistance
Sustainable long-term projects
LESSONS LEARNED
Farmer field schools teach through practice.
Active participation generates commitment and better results.
Adapting solutions to the local context makes the difference.
Small actions generate major transformations.
Trust, respect, and communication sustain the process.
WHAT DO WE LEARN FROM THESE CASES?
The community is the driving force of change.
Every territory has its own path and rhythm.
Local knowledge is powerful.
Collaboration makes the impossible possible.
Sustainability is built day by day.
HOW DO WE SYSTEMATIZE AND SHARE?
1. Document what is done and why it works.
2. Analyze successes, challenges, and lessons learned.
3. Extract key recommendations and practices.
4. Share in order to learn and improve together.
5. Continuously provide feedback and keep improving.
THE VOICE OF THE FIELD IS OUR GUIDE
"When the field speaks and is listened to, development stops being a plan and becomes reality."
RECOGNIZE WHAT WORKS
LEARN FROM EXPERIENCE
BUILD THE FUTURE TOGETHER
EVERY STORY FROM THE FIELD IS A SEED OF CHANGE.
LET US LISTEN, LEARN, AND CONTINUE TRANSFORMING OUR COMMUNITIES.

CHAPTER XIII

Real Cases and Lessons Learned:

The Voice of Rural Communities as a Guide for Development

1. Learning from Reality

Throughout this book, a central idea has been emphasized repeatedly:

☞ Agricultural development cannot be understood solely from theory.

The field teaches lessons that no classroom, manual, or technical report can fully provide.

Reality is often more complex than theoretical models.

For this reason, real experiences constitute one of the most valuable sources of learning in agricultural extension.

Not because they offer absolute truths, but because they reveal:

- What actually happens
- What works
- What fails
- Why certain processes succeed
- Why others collapse despite good intentions

The voice of rural communities is not merely testimony.

It is a source of knowledge.

2. Experience as a Source of Knowledge

Many agricultural extension processes have historically underestimated the value of practical experience.

Technical knowledge has often been prioritized over local knowledge.

However, producers accumulate knowledge through:

- Years of observation
- Continuous experimentation
- Adaptation to changing conditions
- Daily decision-making

This knowledge may not always appear in technical manuals.

But it contains deep understanding of the territory and production systems.

☞ The producer's experience does not replace technical knowledge.

But neither can technical knowledge replace the producer's experience.

True transformation occurs when both forms of knowledge are integrated.

3. Why Many Successful Experiences Are Never Documented

In many rural communities, valuable innovations and successful practices remain invisible.

Not because they lack importance.

But because:

- They are not systematically documented
- They emerge from local experience rather than formal research
- They are considered "normal" by the communities themselves

As a result, many lessons that could strengthen development processes are lost.

Agricultural extension must also learn to identify, value, and disseminate local success stories.

4. Lessons Learned from Field Experience

The following lessons do not arise from theory alone.

They emerge from years of fieldwork alongside producers and communities.

🌱 Lesson 1: Producers Do Not Reject Change—They Reject Excessive Risk

One of the most common misconceptions is believing that producers resist innovation because they are unwilling to change.

Field experience demonstrates otherwise.

Most producers are willing to improve.

What they fear is:

- Losing production
- Losing income
- Endangering family stability

☞ Producers do not reject change itself.

They reject uncertainty when no support exists.

This is why technical support and follow-up are essential.

🌾 Lesson 2: Simple Improvements Often Generate the Greatest Impact

Many significant improvements do not require highly sophisticated technologies.

Field experience repeatedly shows the impact of relatively simple changes, such as:

- Improving planting density
- Better calf feeding practices
- Efficient water management
- Maintaining trees within production systems

Very often, the greatest limitations are found in fundamental practices.

The most advanced solution is not always the most effective.

🐄 Lesson 3: Technology Fails When the System Is Weak

Many technological interventions fail not because the technology itself is inadequate, but because the production system lacks the necessary conditions to sustain it.

Examples include:

- Improved genetics without proper nutrition
- Improved seeds without soil management
- Irrigation systems without adequate organization
- Precision technologies without basic farm records

☞ Technology does not operate independently.

Its success depends on the strength of the system.

👥 Lesson 4: Trust Determines the Success of Processes

Technical knowledge alone is not sufficient.

Processes succeed when trust exists.

Trust is built through:

- Presence
- Respect
- Consistency
- Results
- Genuine listening

Without trust:

- Producers do not openly share problems
- Mistakes remain hidden
- Learning processes weaken

The most effective extension agents are not always those who know the most technically.

They are the ones who build the strongest relationships.

🌍 Lesson 5: Every Territory Is Different

What works successfully in one location may fail in another.

Each territory has its own:

- Climate
- Resources
- Culture

- Economic conditions
- Social dynamics

For this reason:

☞ there are no universal recipes.

Agricultural extension must adapt continuously to local realities.

🔁 Lesson 6: Sustainable Change Takes Time

Many programs expect rapid and visible results.

However, deep transformation processes require time.

Because producers need time to:

- Build confidence
- Experiment
- Learn
- Adapt
- Consolidate new practices

Sustainable change is not immediate.

It is progressive.

Processes fail when unrealistic expectations demand speed instead of sustainability.

Lesson 7: Human Processes Are More Important Than Technologies

Field experience repeatedly demonstrates a fundamental truth:

☞ The greatest transformations do not occur because of technology alone.

They occur because people:

- Organize themselves
- Learn collectively
- Build trust
- Improve decision-making
- Strengthen their capacities

Technology can support transformation.

But people are the ones who make transformation possible.

5. Learning from Mistakes

Not every experience produces positive results.

Failures also teach valuable lessons.

In many cases, failed projects reveal:

- Inadequate diagnoses
- Lack of participation
- Poor adaptation to context
- Absence of follow-up
- Excessive dependence on external resources

Failure should not be viewed merely as a problem.

It should be viewed as an opportunity for learning and improvement.

The key is not avoiding mistakes completely.

The key is learning from them.

6. The Importance of Systematizing Experiences

Experiences generate value only when they are analyzed and shared.

For this reason, systematization is essential.

Systematizing means:

- Documenting processes
- Identifying lessons
- Understanding successes and failures
- Sharing knowledge with others

Without systematization, valuable knowledge disappears.

Communities, institutions, and extension agents all benefit when experiences become collective learning.

7. The Role of the Extension Agent in Learning from Experience

Within this approach, the extension agent should not function solely as a technical advisor.

The extension agent must also become:

- An observer
- A learner
- A facilitator of reflection
- A bridge between knowledge and experience

The field constantly teaches.

Those who believe they already know everything stop learning.

8. Integrating Real Experiences into Agricultural Extension

Real experiences should not be considered secondary elements.

They must become central components of learning processes.

Because producers learn more effectively when they observe:

- Real results
- Concrete examples
- Similar realities
- Practical evidence

Reality itself becomes the most powerful teacher.

9. Integration with the IN, WITH, and FOR the Community Approach

🟤 IN the community → because lessons emerge from real conditions.
🟤 WITH the community → because learning is built collectively.
🟤 FOR the community → because experiences should improve development processes and quality of life.

☞ Real experiences transform agricultural extension into a living and constantly evolving process.

10. Central Principle of the Chapter

The most valuable lessons for agricultural development are not found only in theory or technology.

They are also found in the lived experiences, successes, mistakes, and learning processes of producers and communities.

11. Final Reflection

Rural communities are not merely spaces where projects are implemented.

They are territories rich in knowledge, experience, resilience, and learning.

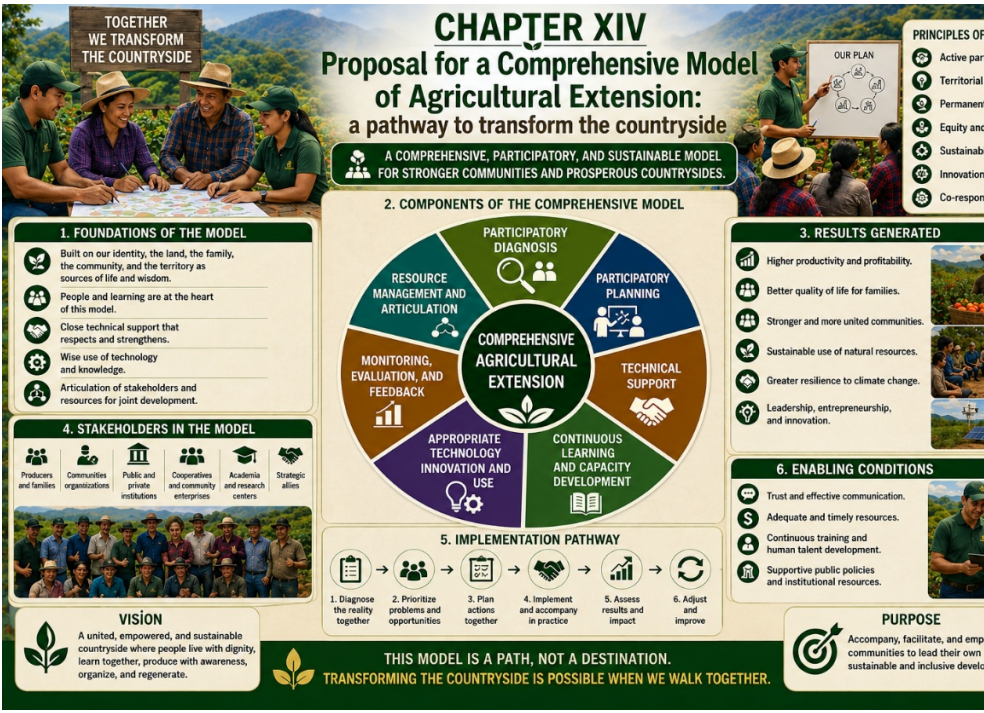
Listening to the voice of rural communities means recognizing that development cannot be imposed from outside.

It must be built from reality itself, together with the people who live it every day.

Because ultimately:

☞ The field does not only produce food.

It also produces knowledge.


TOGETHER WE TRANSFORM THE COUNTRYSIDE
CHAPTER XIV
Proposal for a Comprehensive Model of Agricultural Extension:
a pathway to transform the countryside
A COMPREHENSIVE, PARTICIPATORY, AND SUSTAINABLE MODEL FOR STRONGER COMMUNITIES AND PROSPEROUS COUNTRYSIDES.
OUR PLAN
PRINCIPLES OF
Active par
Territorial
Permanen
Equity and
Sustainab
Innovation
Co-respon
1. FOUNDATIONS OF THE MODEL
Built on our identity, the land, the family, the community, and the territory as sources of life and wisdom.
People and learning are at the heart of this model.
Close technical support that respects and strengthens.
Wise use of technology and knowledge.
Articulation of stakeholders and resources for joint development.
2. COMPONENTS OF THE COMPREHENSIVE MODEL
PARTICIPATORY DIAGNOSIS
PARTICIPATORY PLANNING
TECHNICAL SUPPORT
CONTINUOUS LEARNING AND CAPACITY DEVELOPMENT
APPROPRIATE TECHNOLOGY INNOVATION AND USE
MONITORING, EVALUATION, AND FEEDBACK
RESOURCE MANAGEMENT AND ARTICULATION
COMPREHENSIVE AGRICULTURAL EXTENSION
3. RESULTS GENERATED
Higher productivity and profitability.
Better quality of life for families.
Stronger and more united communities.
Sustainable use of natural resources.
Greater resilience to climate change.
Leadership, entrepreneurship, and innovation.
4. STAKEHOLDERS IN THE MODEL
Producers and families
Communities organizations
Public and private institutions
Cooperatives and community enterprises
Academia and research centers
Strategic allies
5. IMPLEMENTATION PATHWAY
1. Diagnose the reality together
2. Prioritize problems and opportunities
3. Plan actions together
4. Implement and accompany in practice
5. Assess results and impact
6. Adjust and improve
6. ENABLING CONDITIONS
Trust and effective communication.
Adequate and timely resources.
Continuous training and human talent development.
Supportive public policies and institutional resources.
VISION
A united, empowered, and sustainable countryside where people live with dignity, learn together, produce with awareness, organize, and regenerate.
PURPOSE
Accompany, facilitate, and emp
communities to lead their own
sustainable and inclusive develo
THIS MODEL IS A PATH, NOT A DESTINATION.
TRANSFORMING THE COUNTRYSIDE IS POSSIBLE WHEN WE WALK TOGETHER.

CHAPTER XIV

Proposal for an Integrated Agricultural Extension Model:

A Roadmap for Transforming Rural Areas

1. The Need for a New Model

Throughout this book, a fundamental conclusion has emerged repeatedly:

☞ The main limitation of agricultural extension has not been the lack of knowledge or technology.

The central problem has been the approach used to promote change within rural communities.

For decades, many interventions have been characterized by:

- Fragmented actions
- Isolated training events
- Technology-centered approaches
- Limited producer participation
- Weak technical support and follow-up
- Lack of long-term sustainability

As a result, many projects have generated temporary results but failed to produce deep and lasting transformation.

This reality makes it necessary to move toward a new model.

Not simply a new methodology.

A new way of understanding and implementing agricultural extension.

2. More Than an Intervention Model

The integrated agricultural extension model proposed in this chapter should not be understood merely as a technical scheme.

It is a comprehensive framework that integrates:

- Systems thinking
- Human-centered processes
- Community participation
- Continuous learning
- Technical support and follow-up
- Strategic use of technology
- Sustainable territorial development

The model does not seek simply to transfer technologies.

It seeks to strengthen capacities, transform systems, and improve people's quality of life.

3. The Central Foundation of the Model

At the heart of the model lies a fundamental principle:

Working IN, WITH, and FOR the community.

This principle gives coherence to every process and action.

🟩 IN the Community

Because transformation must occur under real conditions and within the territory itself.

🟢 WITH the Community

Because producers are not passive beneficiaries.

They are protagonists of change.

🌍 FOR the Community

Because every process must be oriented toward improving well-being, sustainability, and development.

Without this principle, the model loses its essence.

4. Structural Components of the Integrated Model

The model is built upon several interconnected components that function as an integrated system.

🌱 4.1 The Production System as the Unit of Intervention

The farm is understood as a living system composed of interconnected dimensions:

- Biophysical
- Productive
- Human
- Economic
- Social
- Environmental

Interventions should not focus on isolated components.

They must address the relationships among all elements of the system.

☞ The objective is not simply to improve one component.

It is to strengthen the functioning of the entire system.

👥 4.2 Producers as Protagonists of Change

The model recognizes producers as:

- Decision-makers
- Knowledge holders
- Innovators
- Builders of development

The producer ceases to be:

✖ A passive recipient

And becomes:

✔ An active actor in the transformation process.

This implies:

- Participation in diagnosis
- Participation in decision-making
- Participation in solution design
- Participation in evaluation and learning

Sustainable change only occurs when people take ownership of the process.

🔄 4.3 Continuous Learning Processes

The model replaces isolated training events with continuous learning processes.

Learning occurs through:

- Practice
- Experimentation
- Reflection
- Exchange of experiences
- Community interaction

The farm becomes the principal learning environment.

The community becomes a living learning network.

4.4 Continuous Technical Support and Follow-Up

One of the central components of the model is continuous technical support and follow-up.

The extension agent's role is not limited to providing recommendations.

The extension agent must:

- Accompany processes
- Support decision-making
- Help adjust practices
- Strengthen confidence and learning

☞ Sustainable change requires continuity.

Without follow-up, processes weaken.

4.5 Strategic Use of Technology

Technology is incorporated strategically rather than indiscriminately.

The model proposes a progressive logic:

🟤 Basic Technologies

Focused on strengthening the foundations of the system.

🟡 Intermediate Technologies

Focused on improving efficiency and organization.

🟢 Advanced Technologies

Focused on optimizing systems that are already consolidated.

Technology should respond to the needs of the system.

Not the other way around.

🌍 4.6 Community and Territorial Strengthening

The model recognizes that agricultural development is not limited to the farm itself.

Development also depends on:

- Community organization
- Leadership
- Collective learning
- Local networks
- Territorial coordination

For this reason, the model promotes:

- Producer groups
- Learning communities
- Leadership Schools
- Innovation processes
- Territorial articulation

The objective is to strengthen not only production systems, but also

community capacities.

5. Operational Phases of the Model

The model is implemented through interconnected phases.

🔍 **Phase 1: Participatory Systems Diagnosis**

Understanding:

- The farm
- The producer
- The territory
- The constraints
- The opportunities

Diagnosis is carried out together with producers.

🎯 **Phase 2: Prioritization of Key Constraints**

Identifying:

- What most limits the system
- What can generate the greatest impact
- What is feasible and sustainable

Phase 3: Co-Design of Solutions

Building solutions collaboratively through:

- Dialogue
- Technical analysis
- Local experience
- Risk evaluation
- Adaptation to context

🌱 **Phase 4: Validation Under Real Conditions**

Testing practices:

- On the farm
- At small scale
- Under real conditions

- With continuous observation and adjustment

🔁 Phase 5: Technical Support and Follow-Up

Providing continuous support throughout the implementation process.

This phase includes:

- Visits
- Monitoring
- Guidance
- Problem-solving
- Reinforcement of learning

📈 Phase 6: Evaluation and Continuous Improvement

Analyzing:

- Results achieved
- Lessons learned
- Necessary adjustments
- New opportunities for improvement

The process becomes cyclical and continuously evolving.

6. The New Role of the Extension Agent

Within this model, the extension agent ceases to function solely as a transmitter of knowledge.

The extension agent becomes:

✔ Facilitator
✔ Systems analyst
✔ Learning promoter
✔ Community articulator
✔ Companion in the transformation process

The role is no longer simply to teach.

It is to help communities build sustainable change.

7. Expected Results of the Model

When properly implemented, the model can generate:

✔ Greater adoption of practices

✔ Sustainable improvements in productivity
✔ Reduced production risks
✔ Stronger community organization
✔ Greater producer autonomy
✔ Improved territorial resilience
✔ Stronger learning processes
✔ More sustainable rural development

The impact extends beyond production.

It transforms relationships, capacities, and communities.

8. Conditions Required for Success

For the model to function effectively, several conditions are necessary:

- Long-term institutional commitment
- Well-trained extension agents
- Continuous presence in the territory
- Community participation
- Flexible methodologies
- Appropriate technological use
- Strong trust-building processes

Without these conditions, even the best-designed models weaken.

9. Integration with Public Policies and Institutions

The model also has implications for public policy and institutional design.

Agricultural extension systems should move:

✖ From isolated projects
✖ From short-term interventions
✖ From technology-centered approaches

Toward:

✔ Long-term processes
✔ Systems-based approaches
✔ Human-centered development
✔ Territorial articulation
✔ Sustainable learning systems

Transforming agricultural extension also requires transforming institutions.

10. Central Principle of the Chapter

Effective agricultural extension is not based on isolated technologies or isolated activities.

It is based on integrated systems of learning, participation, technical support, and community transformation.

11. Final Reflection

Transforming rural areas requires much more than projects, technologies, or technical recommendations.

It requires:

☞ understanding systems,
☞ working with people,
☞ building trust,
☞ strengthening communities,
☞ supporting processes over time,
☞ and promoting continuous learning.

The future of agricultural extension depends not on doing more of the same.

It depends on transforming the way development itself is understood and built.

Because true transformation does not come from outside.

It is built within the territory, together with the people who live and work there every day.

CHAPTER XV

The University, the Farm, and the Community:

An Alliance for Transforming Development

1. The Need for a New Relationship

One of the greatest challenges facing agricultural development has been the fragmentation among the principal actors involved in the generation and application of knowledge.

Very often:

- Universities generate knowledge disconnected from rural realities.
- Producers face problems without sufficient technical support.
- Communities remain excluded from innovation processes.
- Institutions work in isolation.

As a result, knowledge is produced but not applied effectively, while communities continue confronting the same structural limitations.

This situation makes it necessary to build a new relationship:

☞ a genuine alliance among the university, the farm, and the community.

2. The University Beyond the Classroom

Universities play a strategic role in agricultural development.

They are responsible for:

- Training professionals
- Generating knowledge
- Conducting research
- Promoting innovation

However, in many cases, academic processes have become excessively disconnected from field realities.

Students often receive:

- Strong theoretical preparation
- Technical concepts
- Scientific information

But with limited direct exposure to:

- Rural territories
- Real production systems
- The complexity of producers' lives
- Practical problem-solving processes

Knowledge that remains only in the classroom loses transformative power.

3. The Farm as a Living Learning Environment

The farm should not be understood merely as a production space.

It is also:

- A learning environment
- A research space
- A laboratory for innovation
- A place for experimentation and adaptation

Within the farm, theory encounters reality.

And reality frequently challenges theory.

For this reason, strengthening the connection between universities and farms

is essential for forming professionals capable of understanding and transforming rural systems.

4. The Community as a Source of Knowledge

For a long time, communities were viewed only as recipients of knowledge.

However, communities also generate knowledge.

Producers accumulate:

- Experience
- Practical solutions
- Adaptation strategies
- Deep territorial understanding

This knowledge may not always be formally documented, but it possesses enormous value.

☞ Development should not flow only from the university toward the community.

It must also flow from the community toward the university.

The relationship must be reciprocal.

5. Building a Three-Way Alliance

The integrated model proposed in this book requires a permanent articulation among:

- Universities
- Producers and farms
- Communities and territories

Each actor contributes essential elements.

🎓 The University Contributes:

- Scientific knowledge
- Research capacity
- Technical training
- Innovation

🌱 The Farm Contributes:

- Real conditions
- Practical validation
- Direct observation
- Production experience

👥 **The Community Contributes:**

- Local knowledge
- Territorial understanding
- Collective learning
- Social organization

When these three dimensions work together, development processes become stronger, more realistic, and more sustainable.

6. Transforming Professional Education

One of the greatest responsibilities of universities is the formation of future professionals.

However, the agricultural sector no longer needs professionals trained exclusively in technical knowledge.

It requires professionals capable of:

- Understanding systems
- Working with people
- Facilitating processes
- Building trust
- Adapting to complexity
- Integrating knowledge and reality

The future extension agent must be much more than a technical expert.

The future extension agent must become:

✔ A facilitator
✔ A systems thinker
✔ A promoter of learning
✔ A bridge between science and community reality

7. Learning Through Real Practice

Students should not learn agricultural extension solely through lectures or manuals.

They must also learn:

- In the field
- With producers
- Through real problems
- Within communities

Practical experience develops capacities that cannot be acquired exclusively through theory.

Among them:

- Observation
- Listening
- Communication
- Adaptation
- Human understanding

The field itself becomes a classroom.

And the community becomes a teacher.

8. Participatory Research and Innovation

Research processes must also evolve.

For many years, research has frequently been conducted:

- From academic institutions
- Under controlled conditions
- Far from the realities of producers

The result has often been knowledge that is difficult to apply.

The new approach requires:

☞ participatory research.

This means:

- Producers participate in identifying problems

- Communities contribute to solution design
- Validation occurs under real conditions
- Learning is shared collectively

Research should not generate isolated information.

It should generate solutions useful for real life.

9. Universities as Agents of Territorial Development

Universities should not remain isolated from the territories that surround them.

They can become strategic actors in:

- Community development
- Capacity building
- Innovation systems
- Technical support and follow-up
- Formation of local leaders

Their impact should extend beyond graduation and academic publication.

The true value of knowledge lies in its capacity to improve people's lives.

10. The Role of Students in Rural Transformation

Students also play a fundamental role.

When they engage directly with communities:

- They better understand reality
- They strengthen their practical capacities
- They develop social commitment
- They build sensitivity toward rural life

The future of agricultural extension also depends on educating professionals with both technical competence and human commitment.

11. Integrating Technology Within This Alliance

Technology can strengthen the relationship among universities, farms, and communities.

For example:

- Digital learning platforms
- Geographic information systems
- Artificial intelligence tools
- Remote communication systems
- Digital monitoring and analysis tools

However, technology should not replace direct interaction with reality.

The field remains irreplaceable as a learning environment.

12. Integration with the IN, WITH, and FOR the Community Approach

◍ IN the community → because universities and students must engage directly with real territories.
◍ WITH the community → because knowledge should be built collaboratively.
◍ FOR the community → because education, research, and innovation must contribute to development and well-being.

☞ This alliance transforms education into a living process connected to reality.

13. A Transformative Vision

The future of agricultural extension requires dismantling traditional barriers between:

- Academia and practice
- Science and local knowledge
- Universities and communities

Development becomes stronger when knowledge circulates in both directions.

No single actor possesses all the answers.

Transformation is built collectively.

14. Central Principle of the Chapter

Sustainable agricultural development requires a permanent alliance among universities, farms, and communities, integrating scientific knowledge, practical experience, and territorial learning processes.

15. Final Reflection

The future of rural development cannot depend solely on institutions, projects,

or isolated technologies.

It depends on building collaborative systems where:

☞ universities learn from communities,
☞ communities strengthen through knowledge,
☞ and farms become spaces for innovation, learning, and transformation.

The agricultural sector needs professionals who not only understand production systems, but who also understand people, territories, and the complexity of rural life.

Because ultimately, true development is not built only through science or technology.

It is built through the connection between knowledge, reality, and human commitment.

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GLOSSARY OF TERMS

A

Technical Support and Follow-Up

A systematic, continuous, and context-based process through which the extension agent supports producers in the implementation, adjustment, and consolidation of changes within their production systems. It includes monitoring, feedback, joint analysis, and risk reduction in decision-making.

Technology Adoption

A dynamic process through which a producer decides to incorporate, adapt, and sustain a technology or productive practice within the production system, influenced by technical, economic, cultural, and risk-related factors.

C

Sustainable Change

A structural transformation within the production system that is sustained over time and based on local ownership, economic viability, technical relevance, and environmental balance.

Training

An educational activity aimed at transferring knowledge. Within the modern approach, training alone is considered insufficient unless accompanied by practical application, field validation, and technical support and follow-up.

Biophysical Component

The set of natural elements within the production system, including soil, water, climate, and biodiversity.

D

Systems Diagnosis

A participatory process of comprehensive farm analysis that enables the identification of interrelationships, structural constraints, and opportunities for improvement.

Sustainable Rural Development

A multidimensional process aimed at improving living conditions in rural areas without compromising resources for future generations.

E

Systems Approach

An analytical perspective that understands the farm as an interconnected system in which each component influences the others.

Agricultural Extension

An educational, technical, and social process aimed at facilitating capacity development among producers through participatory learning, technical support and follow-up, and the joint construction of solutions.

Leadership, Entrepreneurship, and Innovation Schools

A community-based educational strategy designed to strengthen human, organizational, and productive capacities for sustainable development.

F

Farm as a System

A production unit conceived as a complex system integrating productive, human, economic, and environmental factors.

EPILOGUE

This book was not written from theory alone.

It was born from years of fieldwork, from direct contact with producers and rural communities, from observing both successes and failures, and from the conviction that agricultural development can and must be approached differently.

Throughout these pages, one central idea has been repeated consistently:

☞ the principal challenge of agricultural extension is not merely technological.

It is human.

For decades, enormous efforts have been invested in projects, programs, technologies, and training processes. Yet in many cases, the expected transformation has not been achieved because the most essential element was overlooked:

- understanding people,
- understanding systems,
- and understanding reality itself.

The field is not transformed through isolated recommendations.

It is transformed through continuous processes built with trust, participation, learning, and sustained technical support and follow-up.

This book does not seek to present absolute truths or rigid formulas.

Every territory is different.
Every community has its own reality.
Every producer makes decisions under unique conditions.

For this reason, the true value of this work lies not in providing recipes, but in proposing a way of thinking and acting:

- understanding before intervening,
- listening before recommending,
- building together instead of imposing,
- and supporting processes instead of limiting intervention to isolated events.

Agricultural extension must evolve.

The challenges facing rural areas today are increasingly complex:

- climate change,
- environmental degradation,
- migration,
- economic instability,
- technological transformation,
- and growing pressure on natural resources.

These challenges cannot be addressed through fragmented approaches or isolated technological solutions.

They require:

☞ systems thinking,
☞ community participation,
☞ continuous learning,
☞ and institutional commitment sustained over time.

Technology undoubtedly offers extraordinary opportunities.

However, technology alone will never replace:

- human sensitivity,
- direct field experience,
- trust-based relationships,
- or the capacity of communities to learn and transform themselves.

The future of agricultural extension will not depend exclusively on more sophisticated technologies.

It will depend on our capacity to build more humane, intelligent, participatory, and sustainable processes.

The future of rural development will not be built only through science or technology.

It will be built through the integration of:

- knowledge,
- experience,
- communities,

- and human commitment.

If this book contributes—even modestly—to generating reflection, questioning traditional approaches, strengthening field processes, and inspiring new ways of working with producers and communities, then its purpose will have been fulfilled.

Finally, I would like to reaffirm my respect, admiration, and gratitude to the women and men of the rural world, whose daily work sustains food production, protects natural resources, and supports life itself.

The countryside does not only produce food.

☞ It produces life.
☞ It produces knowledge.
☞ It produces the future.

ABOUT THE AUTHOR

Francisco Telémaco Talavera Siles

Francisco Telémaco Talavera Siles not only knows the field from theory.

He has lived it.

Before becoming an Agricultural Engineer, before his Master's and Doctorate studies, he was a farmer. He worked the land alongside his father and his brothers, learning from an early age that the field is not only about production, but also about effort, uncertainty, difficult decisions, and hope.

That experience shaped his life and the way he understands agricultural development.

His academic journey has always been driven by a constant pursuit of excellence, standing out from his early undergraduate studies to his doctoral training in Sweden. Beyond his academic achievements, his greatest learning has come from understanding the reality of those who live and work in the field.

Throughout his career, he has assumed multiple responsibilities in the academic, scientific, and institutional fields, including serving as Rector of the National Agrarian University, as well as holding leadership positions at both the regional and international levels as President of the National Council of Universities of Nicaragua, the Central American Higher Education Council (CSUCA), and the Ibero-American University Council.

He currently serves as President of the World Team of Educational Leaders **KAIRÓS-EDUCATION**, promoting processes of educational transformation with a global vision.

In line with the approach presented in this work, he is also a promoter and facilitator, together with Dr. Omelio Borroto Leal, of the **Leadership, Entrepreneurship, and Innovation Schools** in Latin America, the Caribbean, and Africa, contributing to the development of human capacities as the foundation for sustainable development in rural communities.

He is also a founding member of the College of Agricultural Engineers of Nicaragua, reaffirming his commitment to strengthening the agricultural sector.

However, beyond titles and responsibilities, his work has always been guided by a profound conviction:

The development of the field does not depend solely on technology, but on the way we work with people, in their communities, and within their production systems.

This book is the result of years of experience, reflection, and direct work with thousands of producers across different territories.

It is not a work written at a desk. It is a work built from the field.

In a world where technology is advancing rapidly, agricultural development continues to face a fundamental challenge:

achieving real and sustainable changes in the lives of producers.

For decades, numerous extension programs have sought to improve production and productivity, but their results have often been limited. Why is that?

It has not been the lack of knowledge or technology.
It has been the way in which work has been done in the field.

This book proposes a profound shift in approach:

- From the transfer of technology to the **construction of processes**
- From seeing the farm as isolated parts to understanding it as **a system**
- From working for the producer to working **IN, WITH, and FOR** the community

Based on the author's direct experience with thousands of producers in different countries, this work presents an integrated model of agricultural extension grounded in:

- Systems approach
- Ongoing technical support and follow-up
- Community learning
- Appropriate use of technology
- Human capacity development

It also incorporates concrete experiences and practical tools, as well as the implementation of **Leadership, Entrepreneurship, and Innovation Schools** in Latin America, the Caribbean, and Africa, as a strategy to strengthen communities and ensure the sustainability of development.

This is not a book of theory.
It is a guide to transforming the way we work in the field.

Designed for technicians, extension agents, decision-makers, academics, and producers, this book offers a clear, practical, and profoundly human vision to face the challenges of the agricultural sector today and in the future.

International Editorial on
Education and Development